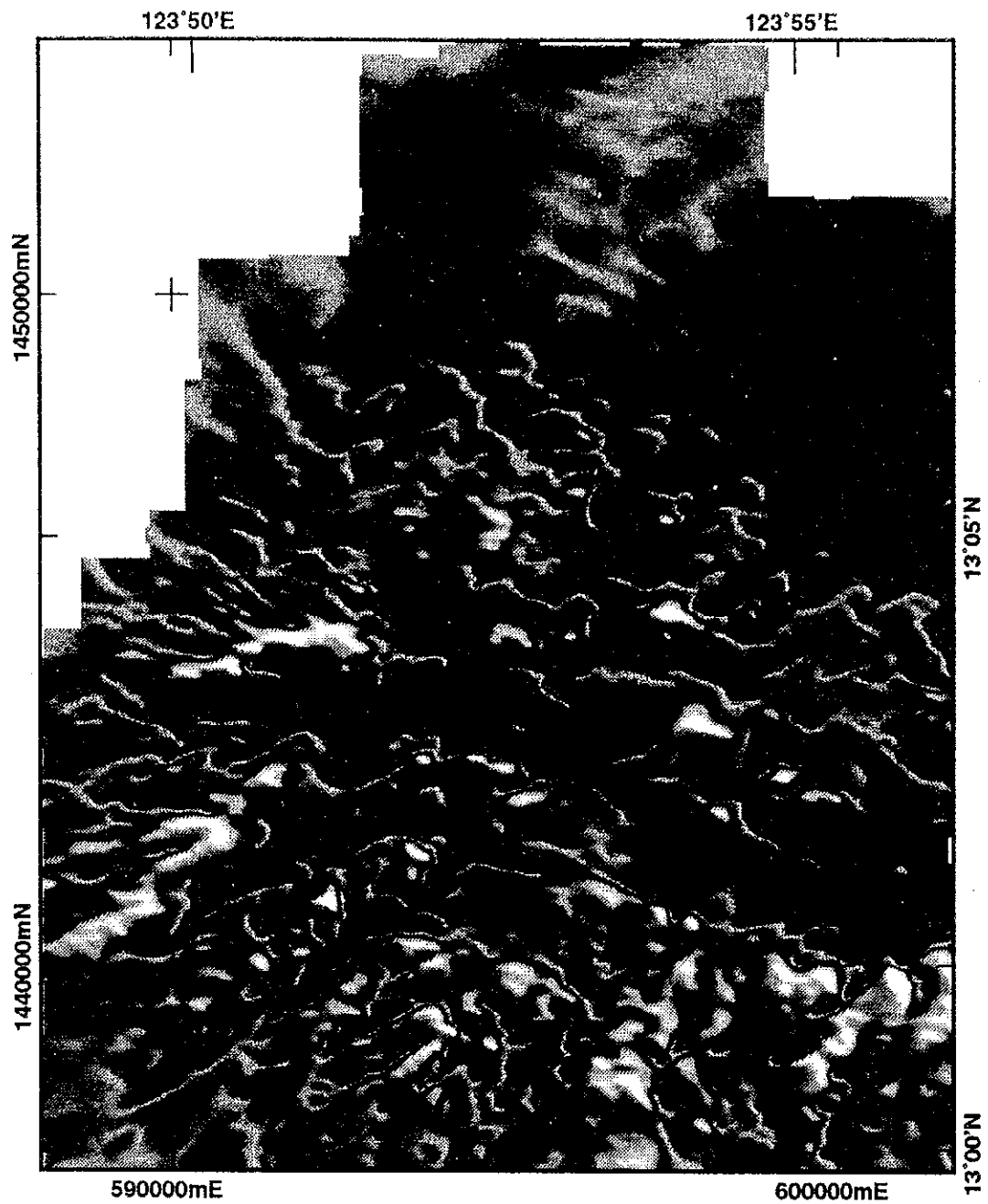


Appendix 1

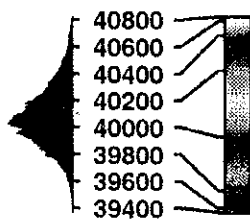


**Legaspi Project Area
Philippines**

Total Magnetic Intensity
Reduced to Pole
Colour: Magnetic Intensity
Shade: North-East Illumination



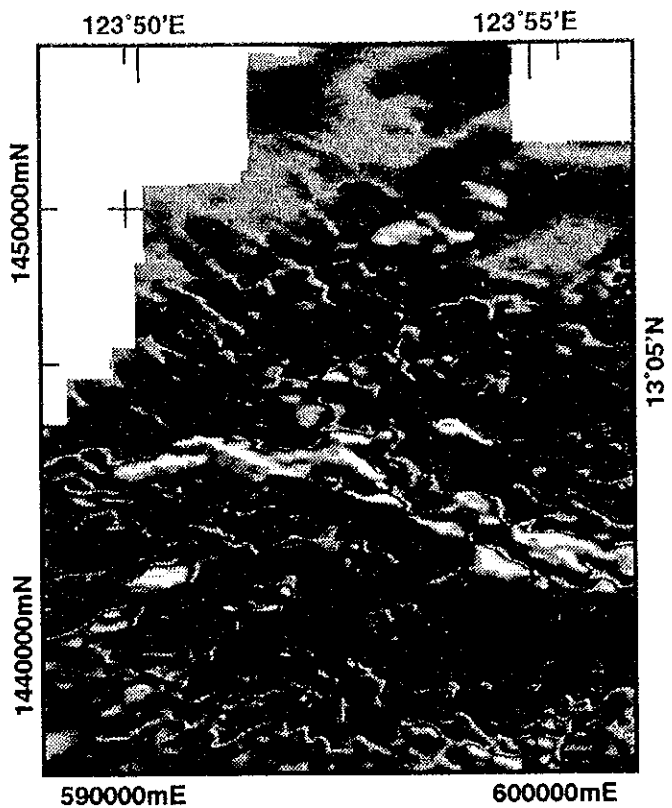
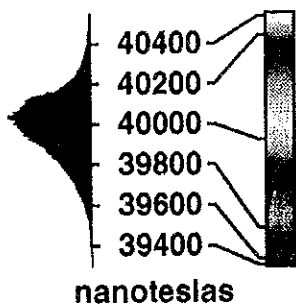
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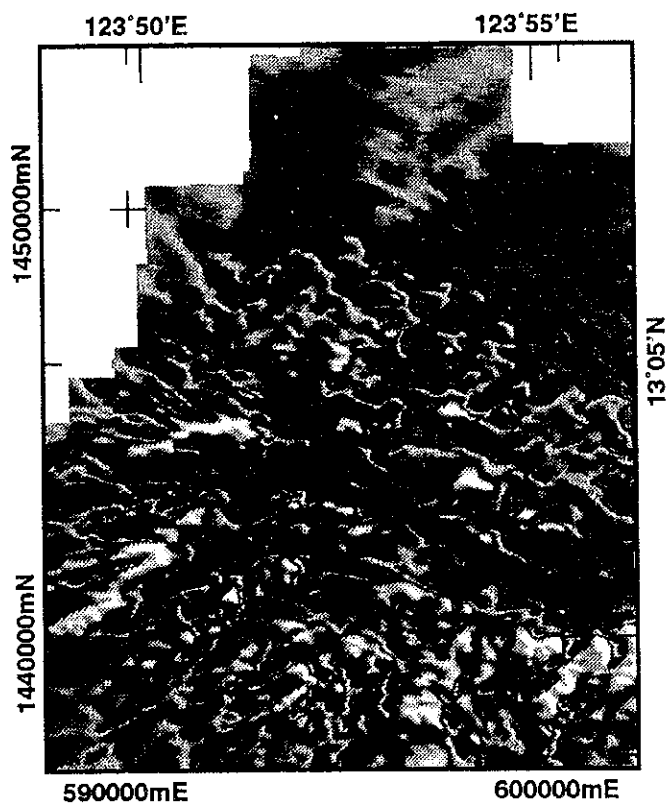
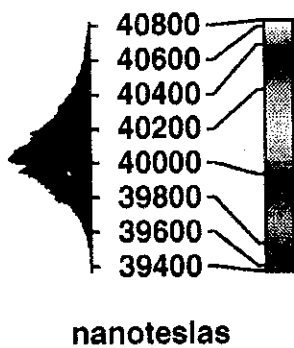
nanoteslas



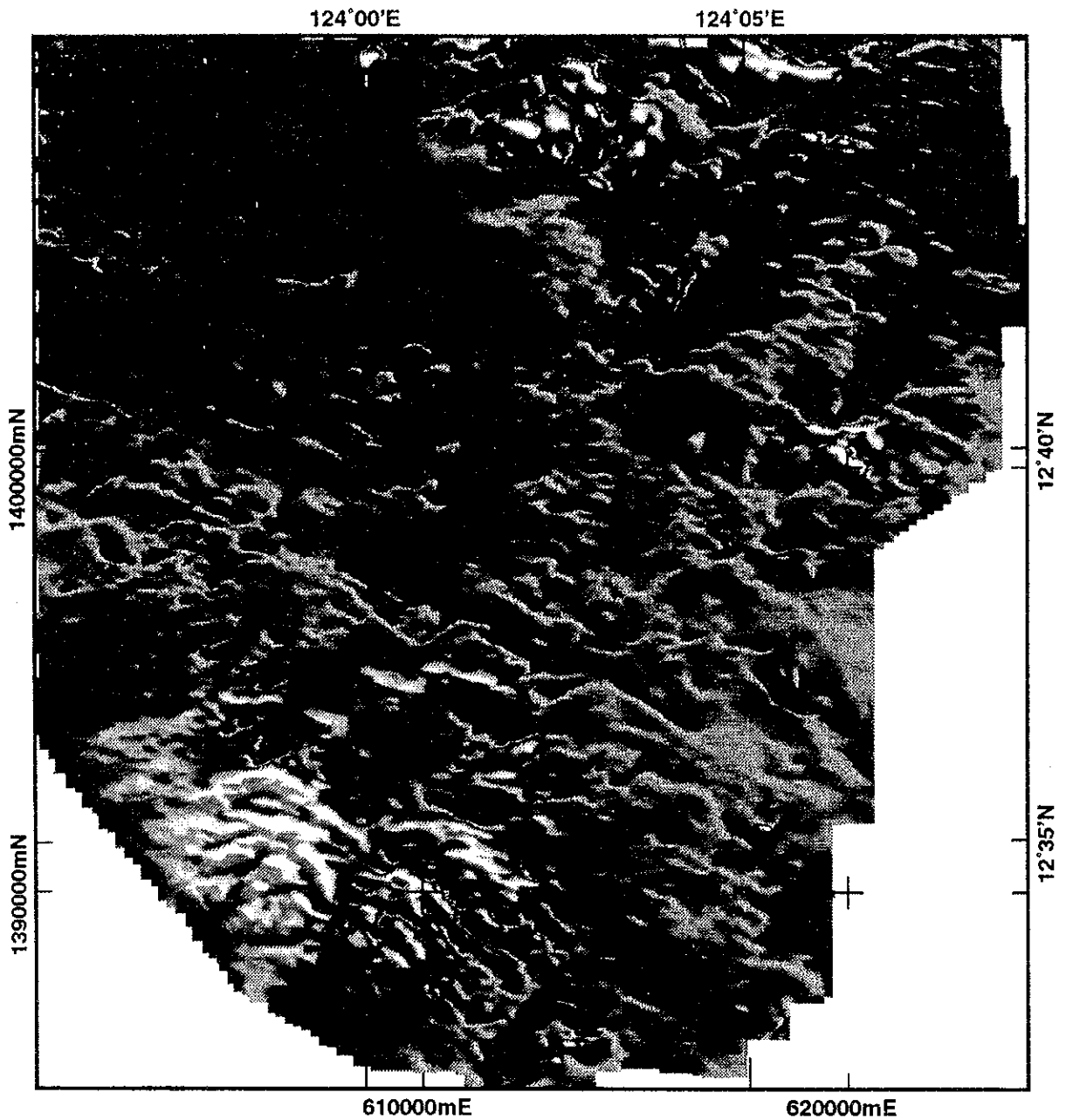
kilometres



Total Magnetic Intensity



**Total Magnetic Intensity
Reduced to Pole**

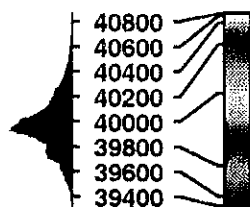


**Irosin Project Area
Philippines**

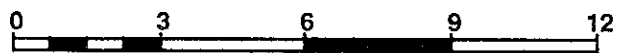
**Total Magnetic Intensity
Reduced to Pole
Colour: Magnetic Intensity
Shade: North-East Illumination**



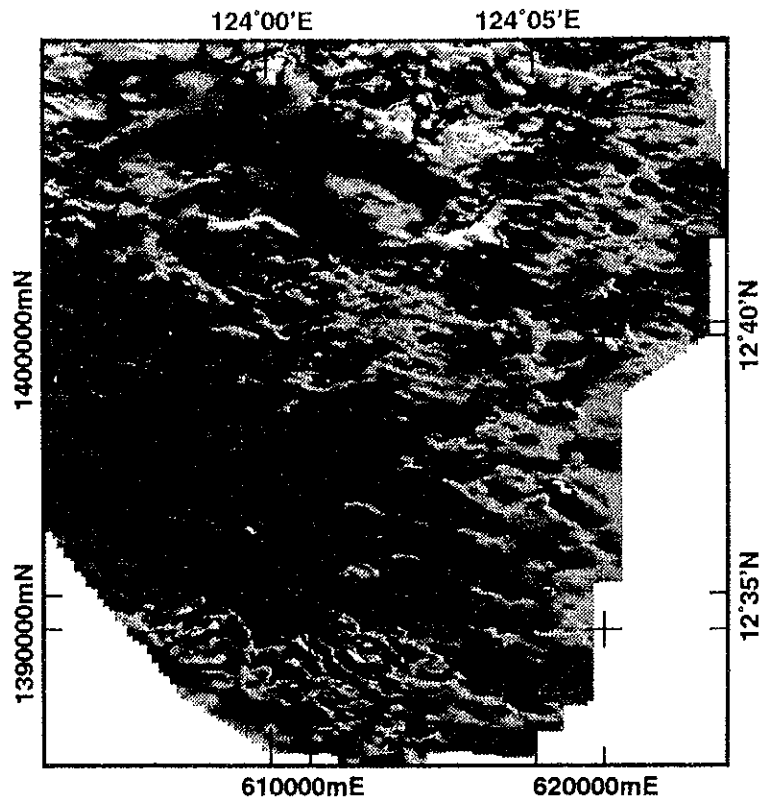
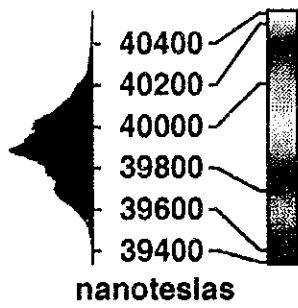
**Flown and compiled by
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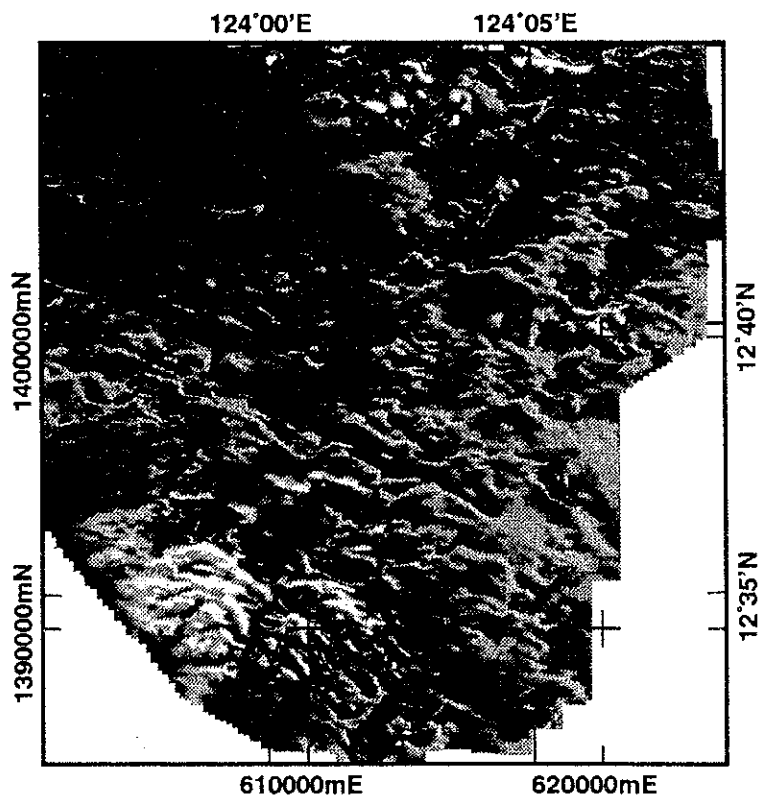
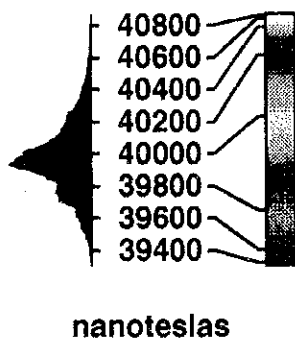
nanoteslas



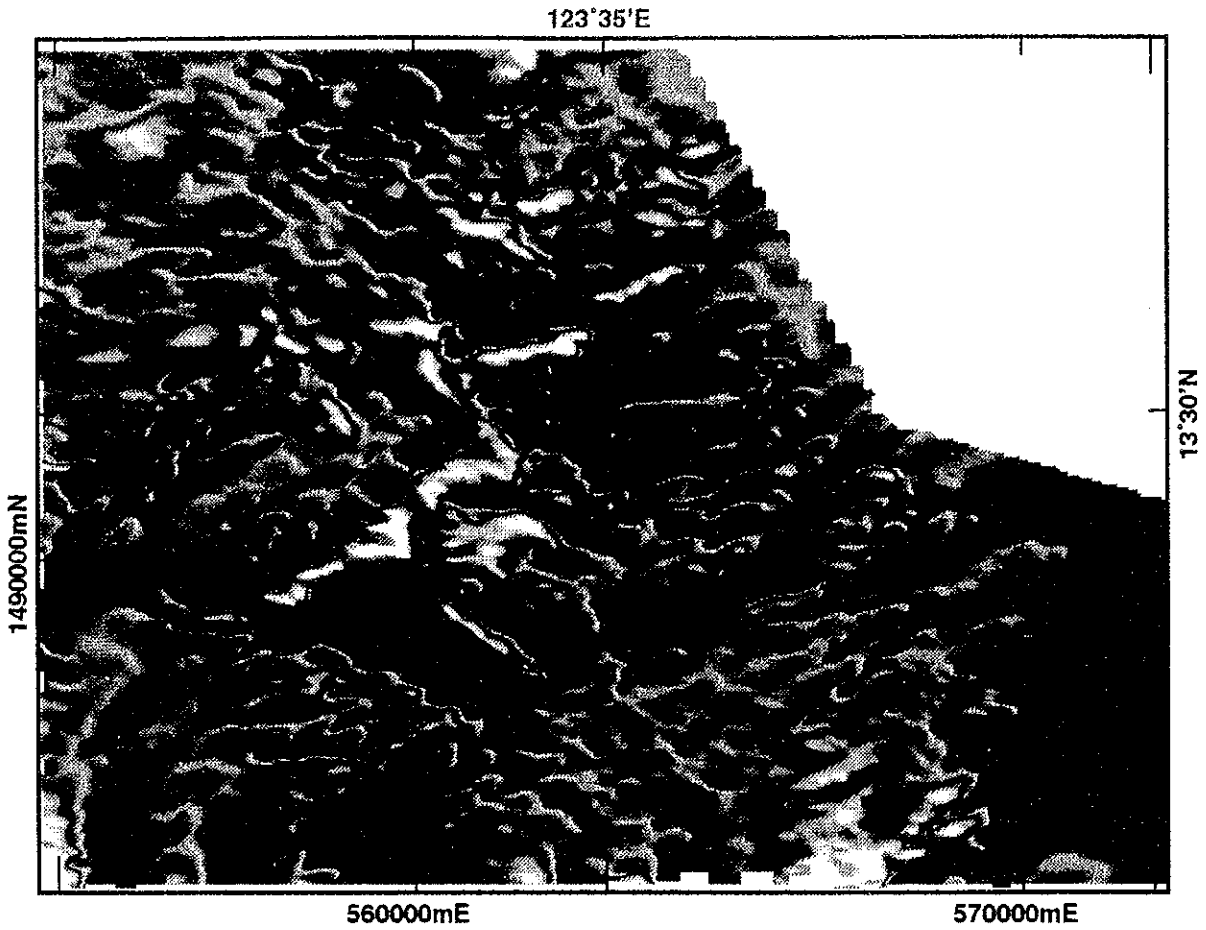
kilometres



Total Magnetic Intensity



**Total Magnetic Intensity
Reduced to Pole**

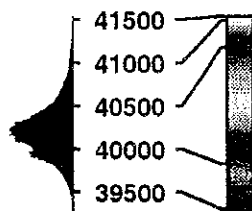


**Tiwi Project Area
Philippines**

Total Magnetic Intensity
Reduced to Pole
Colour: Magnetic Intensity
Shade: North-East Illumination



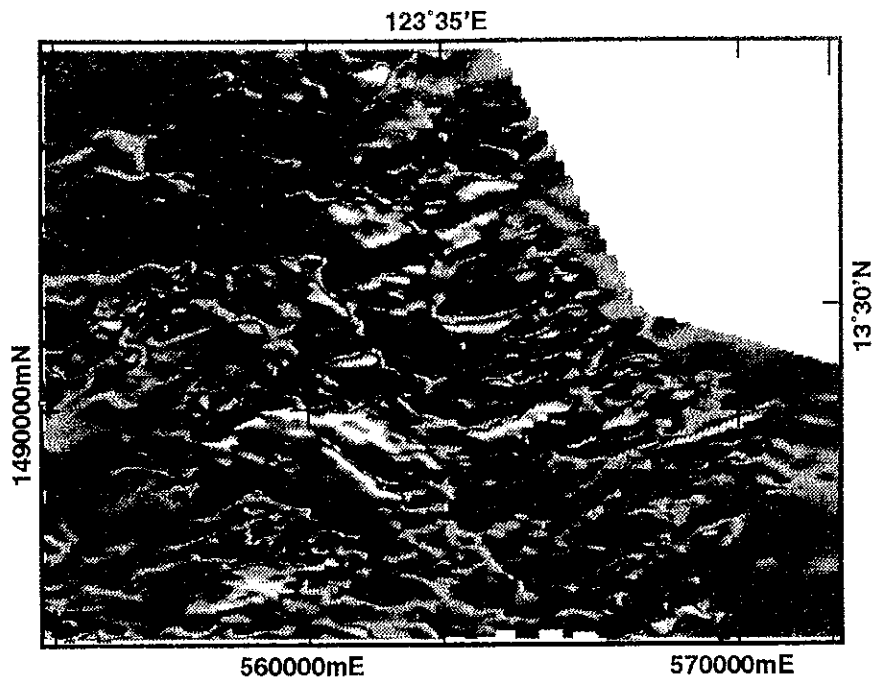
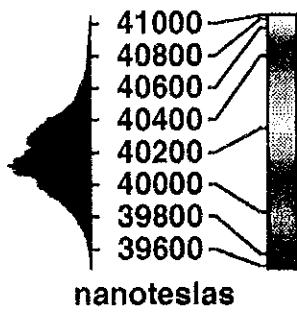
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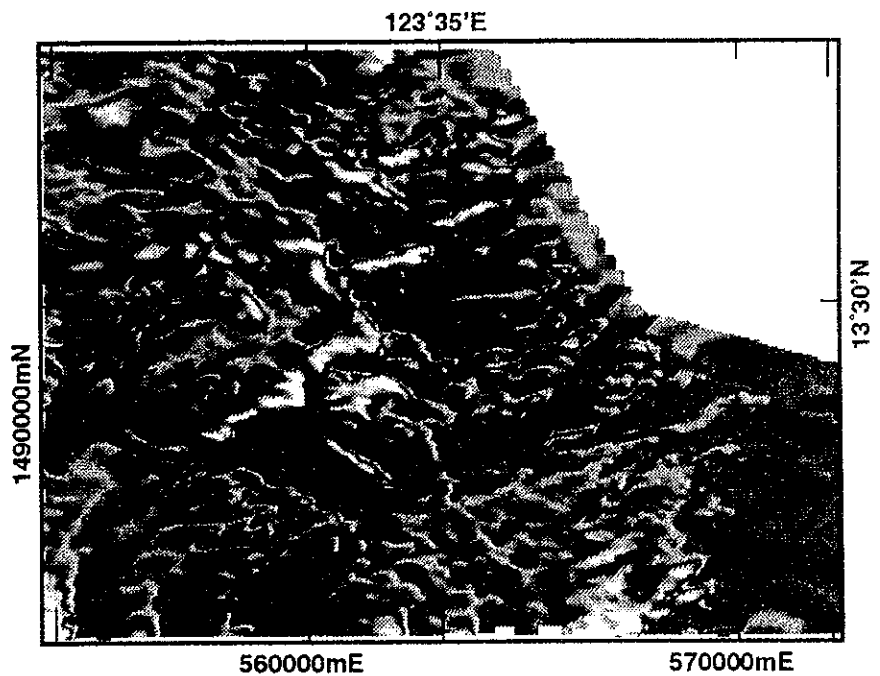
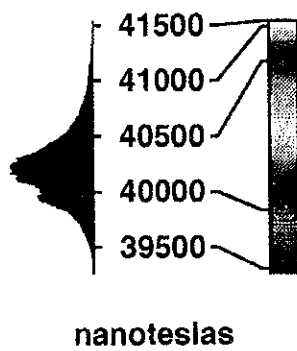
nanoteslas



kilometres

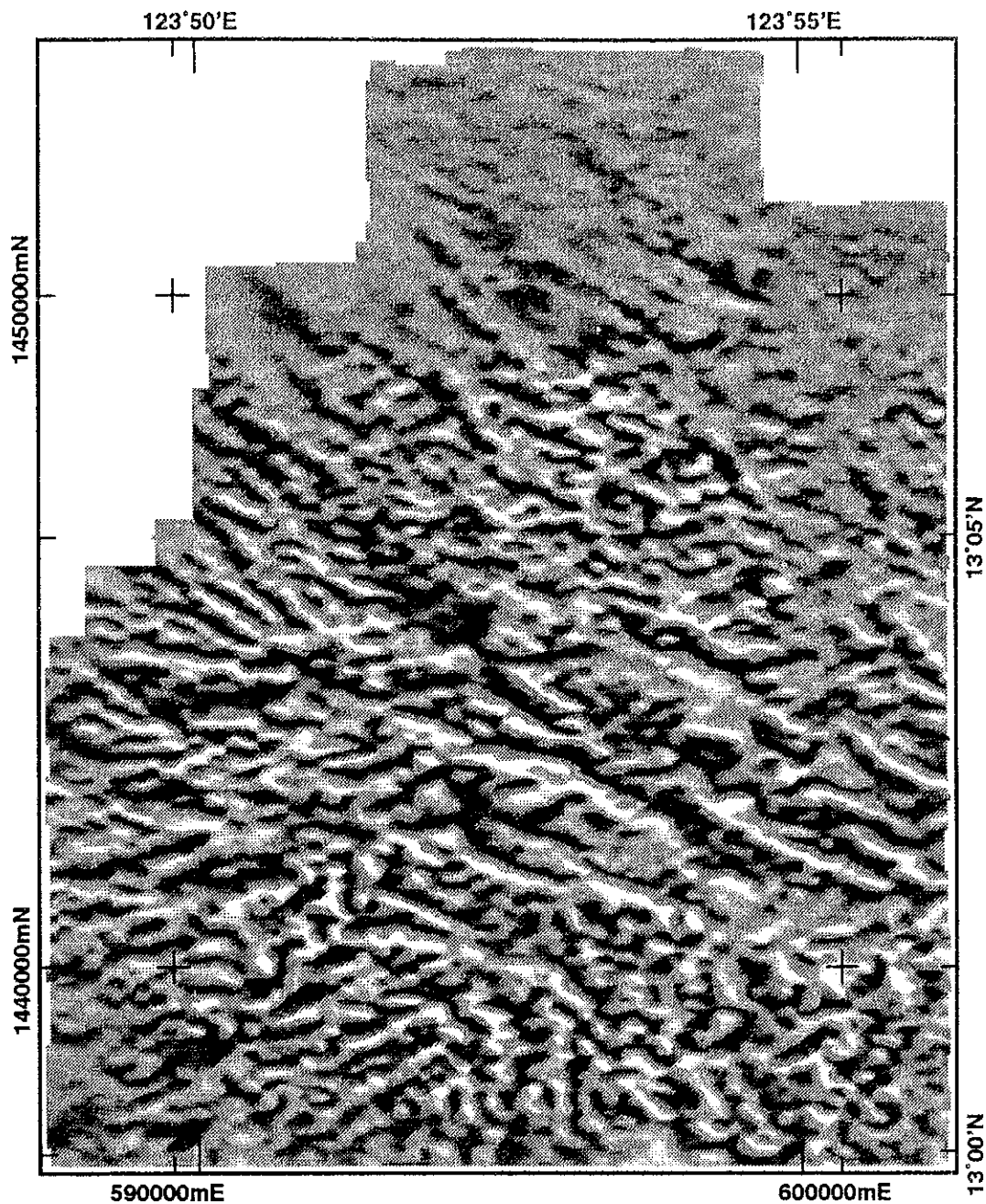


Total Magnetic Intensity



**Total Magnetic Intensity
Reduced to Pole**

Appendix 2



**Legaspi Project Area
Philippines**

**Total Magnetic Intensity
Reduced to Pole**

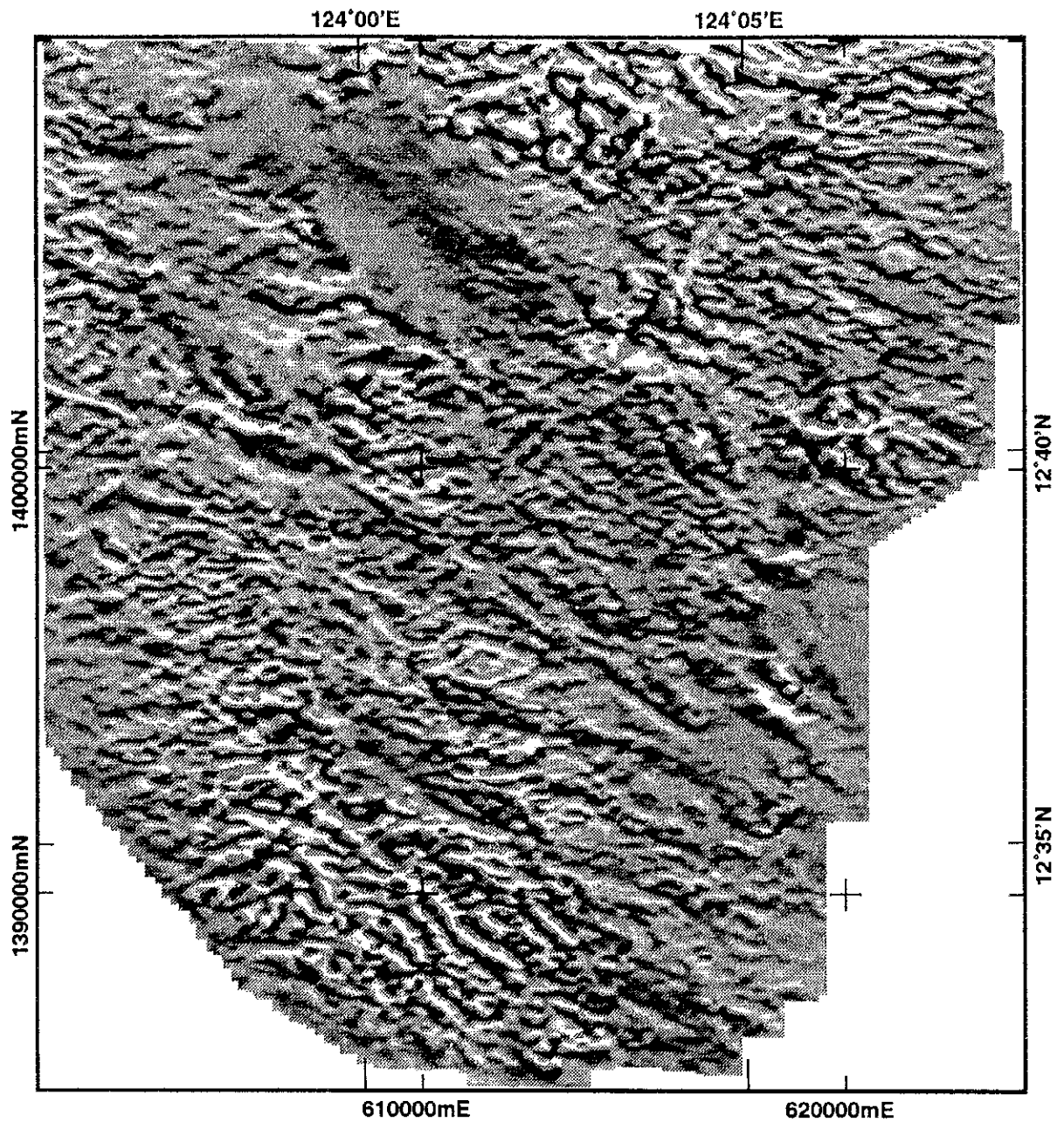
**First Vertical Derivative Merged
With North-East Illumination**



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JICA/MMAJ/JMEC**



kilometres



**Irosin Project Area
Philippines**

**Total Magnetic Intensity
Reduced to Pole**

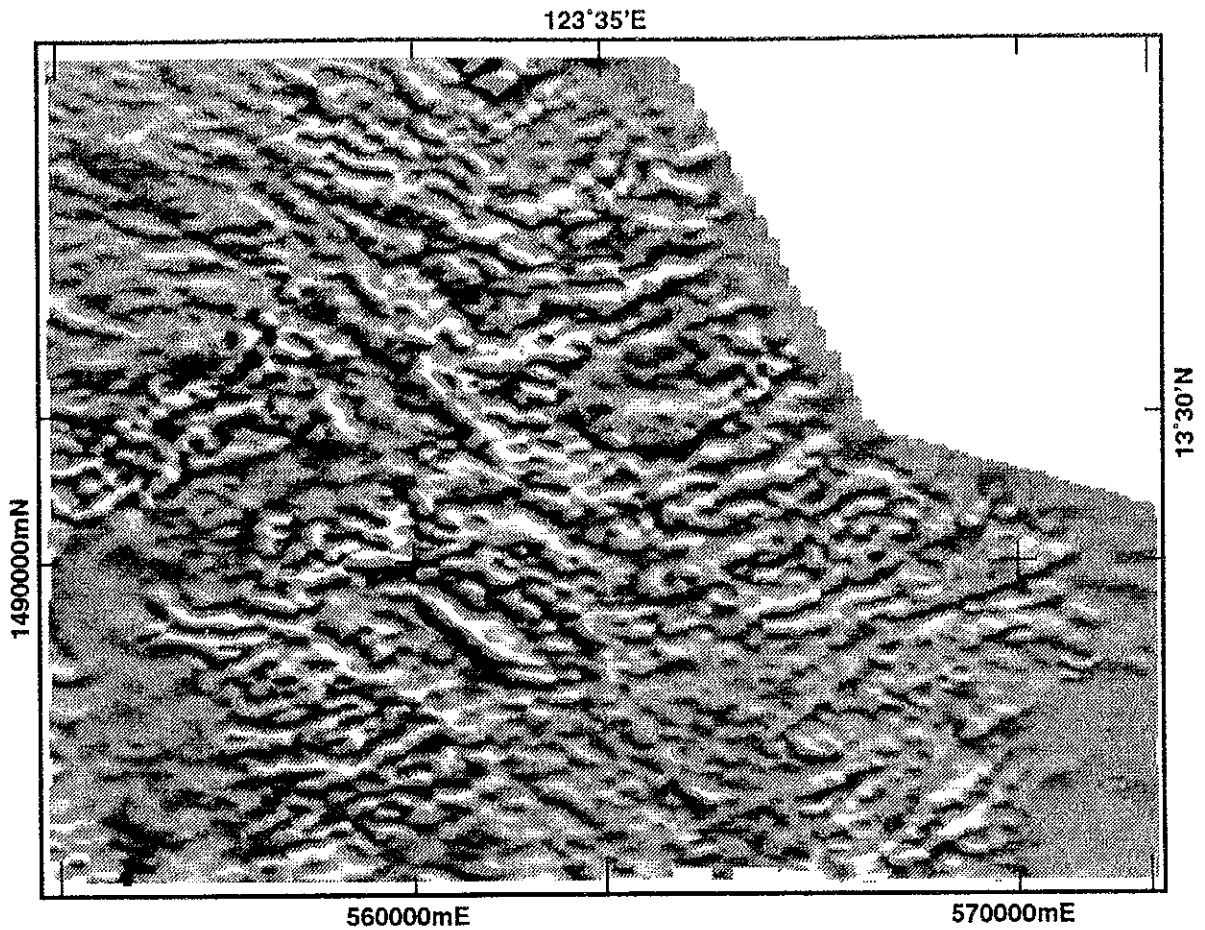
**First Vertical Derivative Merged
With North-East Illumination**



**Flown and compiled by
World Geoscience for
JICA/MMAJ/JMEC**



kilometres



**Tiwi Project Area
Philippines**

**Total Magnetic Intensity
Reduced to Pole**

**First Vertical Derivative Merged
With North-East Illumination**



**Flown and compiled by
World Geoscience for
JICA/MMAJ/JMEC**



kilometres

Appendix 3

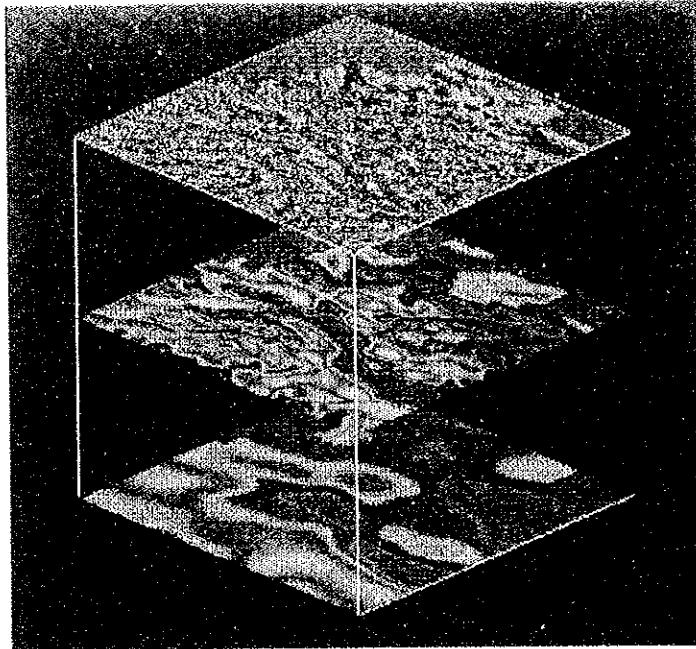
Application of Pseudo Depth Slicing to the Legaspi Aeromagnetic Survey

The Pseudo Depth Slicing technique was applied to the Legaspi aeromagnetic data as an attempt to separate the magnetic signal of the surface volcanic material from the signal of any significant intrusive bodies at depth. This is based on the theory that the rate of change in the horizontal plane of the magnetic field from a shallow body is greater than that for a deeper body (ie shallow bodies display a signal of higher spatial frequency).

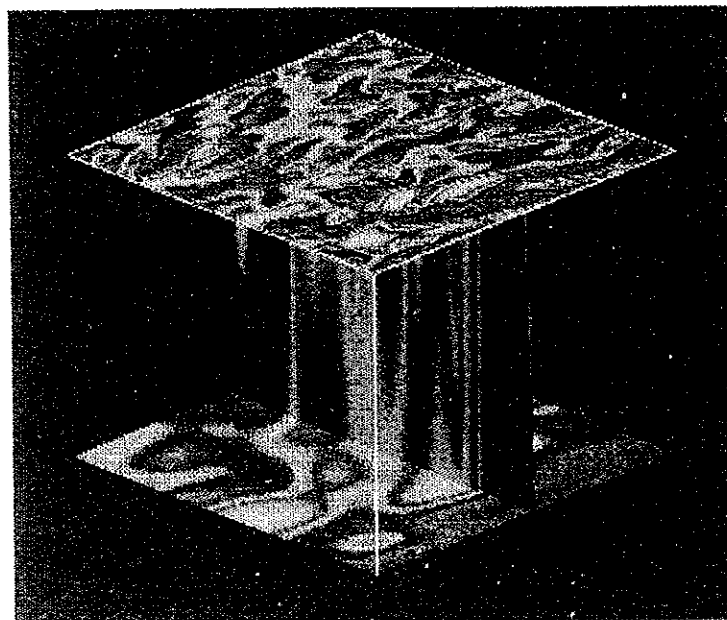
Problems arise with this method when the materials at shallower depths have a high magnetic susceptibility. This can effectively hide or overpower the low amplitude magnetic fields of deeper bodies, and the two frequencies of data cannot be separated. Frequency separation can also be made ineffective or impossible by "leakage". Frequency filters must have a gradual cutoff (ie past a nominal frequency, the contribution of the data is gradually reduced) to avoid "edge effects" which may introduce noise or "ringing" to the data. Unfortunately this requirement results in high frequency, high amplitude magnetic signals appearing as broad, low frequency signals in the "deeper" pseudo depth slices (PDS), even though their source is at the surface. It is up to the person interpreting the data to determine the validity of any anomalies in the lower slices by comparing all PDS images and the original data.

The data from the Legaspi survey suffers from all of the problems above in varying degrees. The high frequency magnetic signal from the surface volcanic material generally dominates the pseudo depth slices. However, one feature appearing in the slices which may be significant is the obvious circular magnetic high marked on the accompanying PDS 2 image. The feature is almost impossible to see in the total magnetic intensity and PDS1 images, indicating that in this instance the anomaly should be investigated further during the course of the interpretation.

Often, interpretation of the bulk structure of an area can be assisted by using the second and third pseudo depth slices to generalise the magnetic texture. The high frequency signal may be regarded as noise when trying to determine general structure as a first pass of interpretation. This approach has been taken with the Legaspi survey. For example, an approximate location of regional faults can be determined from one of the deeper slices. As the interpretation progresses the position of the faults can be refined with the other pseudo depth slices and the total magnetic intensity images.

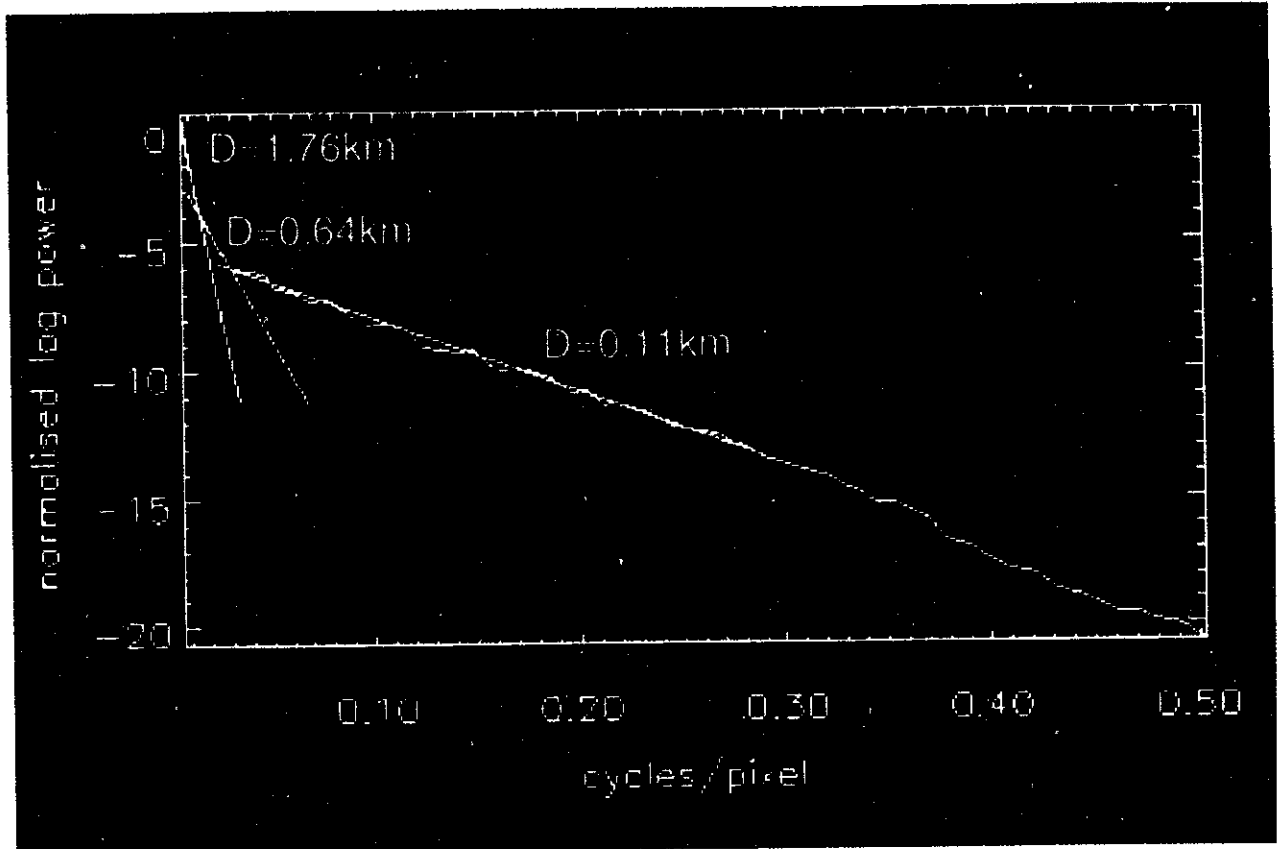


The schematic figure above shows how the frequency of the magnetic signal changes with the depth of the source body. It consists of the three pseudo depth slices for the Legaspi area stacked vertically and spaced linearly, as opposed to being separated by a distance proportional to the theoretical depth. The diagram below shows how a high amplitude, high frequency magnetic signal can appear in the deeper pseudo depth slices due to "leakage". It is for this reason that the pseudo depth slices have been used more often as a tool to indicate general structure than as a depth indicator.



Radially Averaged Power Spectrum for the Legaspi Aeromagnetic Survey

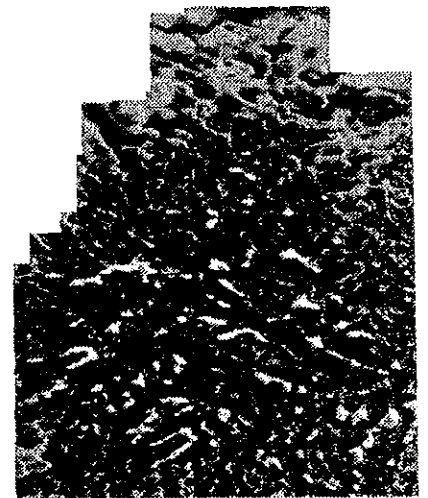
Linear sections of the power spectrum are theoretically produced by magnetic sources at a depth (D) which is proportional to the slope of the curve.



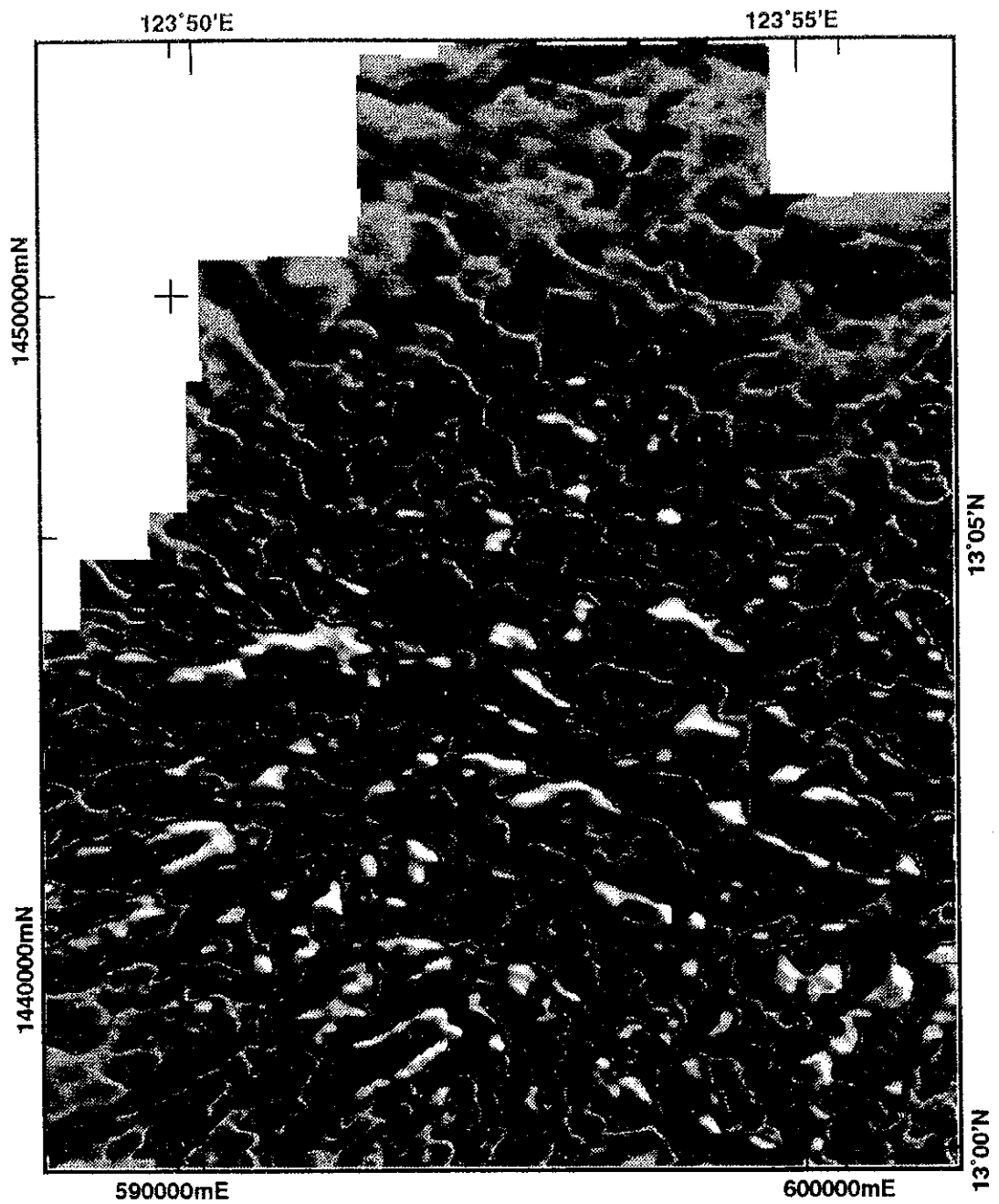
"Deepest" Slice
Theoretical Source
Depth=1.76km



"Intermediate" Slice
Theoretical Source
Depth=0.64km



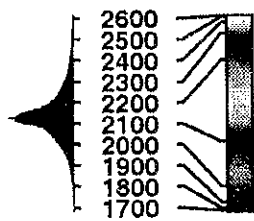
"Shallowest" Slice
Theoretical Source
Depth=0.11km



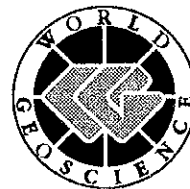
**Legaspi Project Area
Philippines**

TMI RTP Pseudo Depth Slice 1

**Colour: Magnetic Intensity
Shade: North-East Illumination**



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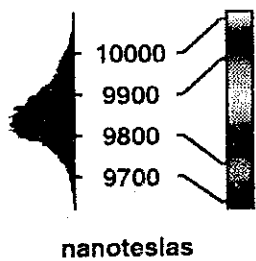
kilometres



**Legaspi Project Area
Philippines**

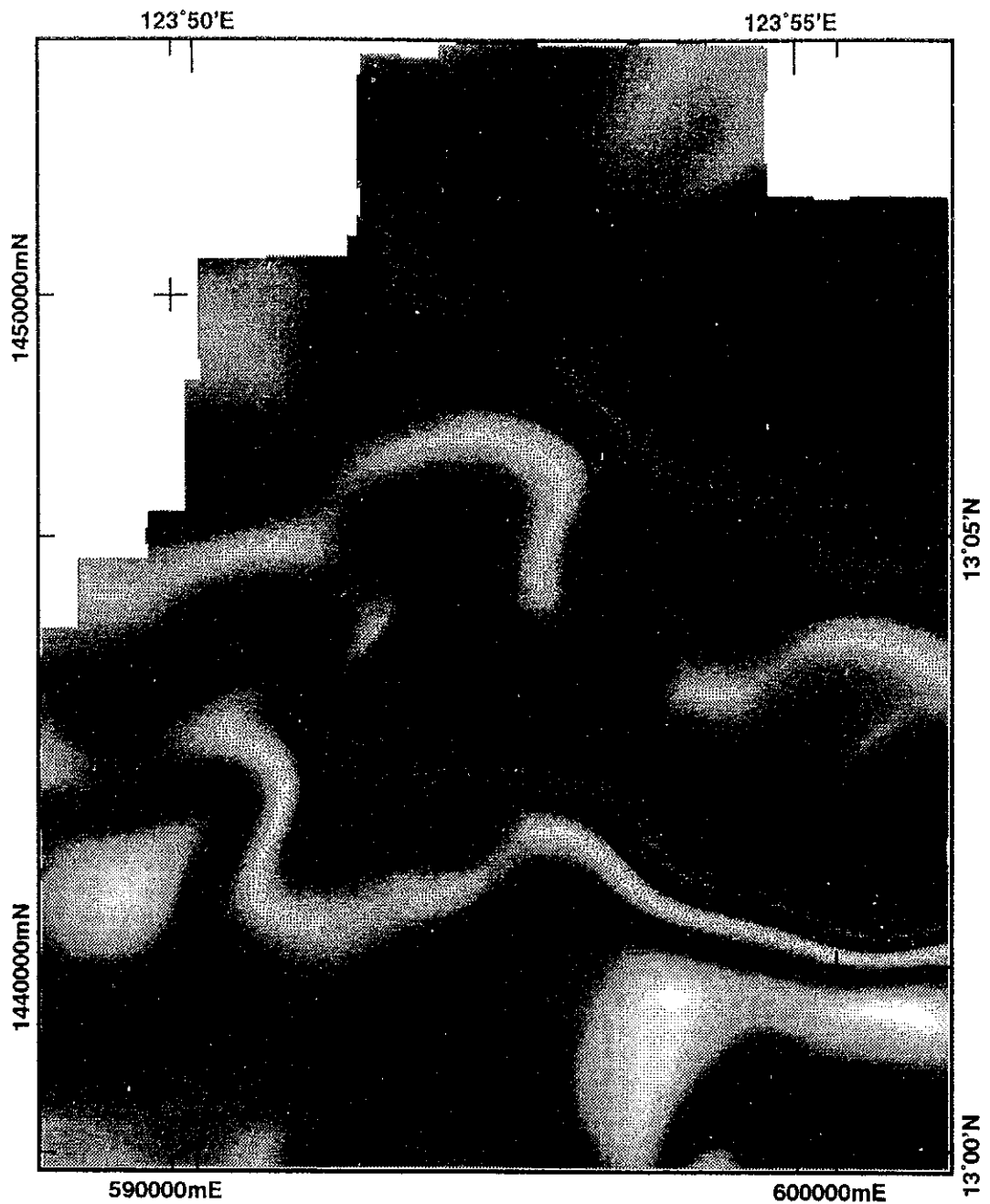
TMI RTP Pseudo Depth Slice 2

Colour: Magnetic Intensity
Shade: North-East Illumination



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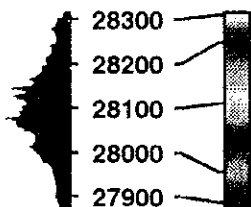




**Legaspi Project Area
Philippines**

TMI RTP Pseudo Depth Slice 3

Colour: Magnetic Intensity
Shade: North-East Illumination



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kilometres

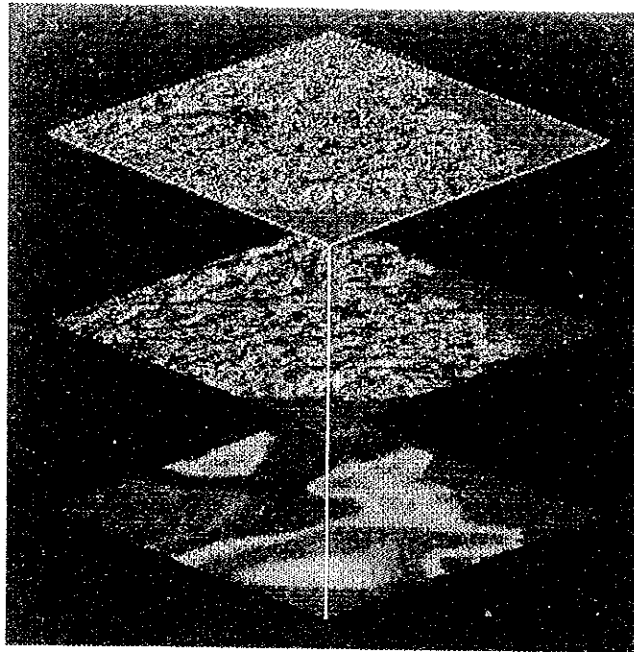
Application of Pseudo Depth Slicing to the Irosin Aeromagnetic Survey

The Pseudo Depth Slicing technique was applied to the Irosin aeromagnetic data as an attempt to separate the magnetic response of the surface volcanic material from the response of any significant intrusive bodies at depth. This is based on the theory that the rate of change in the horizontal plane of the magnetic field from a shallow body is greater than that for a deeper body (ie shallow bodies display a response of higher spatial frequency). Pseudo depth slices One, Two and Three are provided in this appendix.

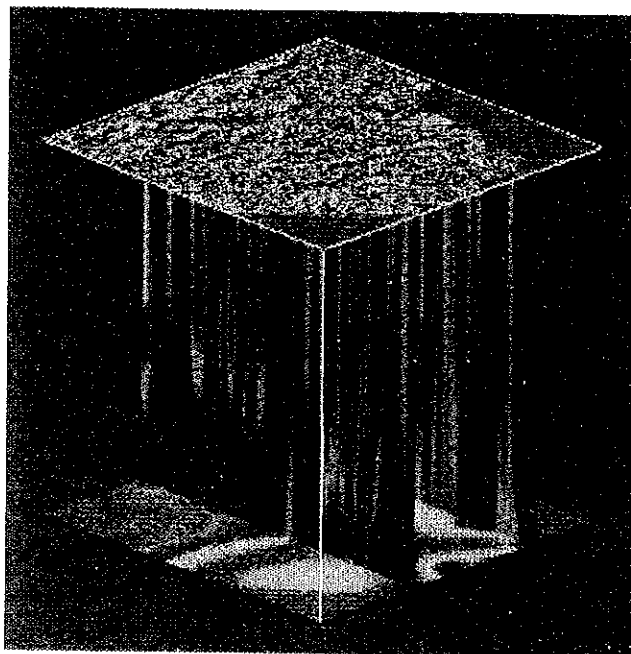
Problems arise with the pseudo depth slicing method when the materials at shallower depths have a high magnetic susceptibility. This can effectively hide or overpower the low amplitude magnetic fields of deeper bodies, and the two frequencies of data cannot be separated. Frequency separation can also be made ineffective or impossible by "leakage". Frequency filters must have a gradual cutoff (ie past a nominal frequency, the contribution of the data is gradually reduced) to avoid "edge effects" which may introduce noise or "ringing" to the data. Unfortunately this requirement results in high frequency, high amplitude magnetic signals appearing as broad, low frequency signals in the "deeper" pseudo depth slices (PDS), even though their source is at the surface. It is up to the person interpreting the data to determine the validity of any anomalies in the lower slices by comparing all PDS images and the original data.

Often, interpretation of the bulk structure of an area can be assisted by using the second and third pseudo depth slices to generalise the magnetic texture. The high frequency signal may be regarded as noise when trying to determine general structure as a first pass of interpretation. This approach has been taken with the Irosin survey. For example, an approximate location of regional faults can be determined from one of the deeper slices. As the interpretation progresses the position of the faults can be refined with the other pseudo depth slices and the total magnetic intensity images.

The data from the Irosin survey suffers from all of the problems described above in varying degrees. The high frequency magnetic signal from the surface volcanic material generally dominates the pseudo depth slices. Pseudo depth slice one, in conjunction with the first vertical derivative of the total field data, is very useful for separating different volcanic units by their magnetic texture. PDS2 is a "cleaner" image, with less high frequency noise. It accentuates the circular feature which is the subject of profile CD, and allows for recognition of some of the broader magnetic features.

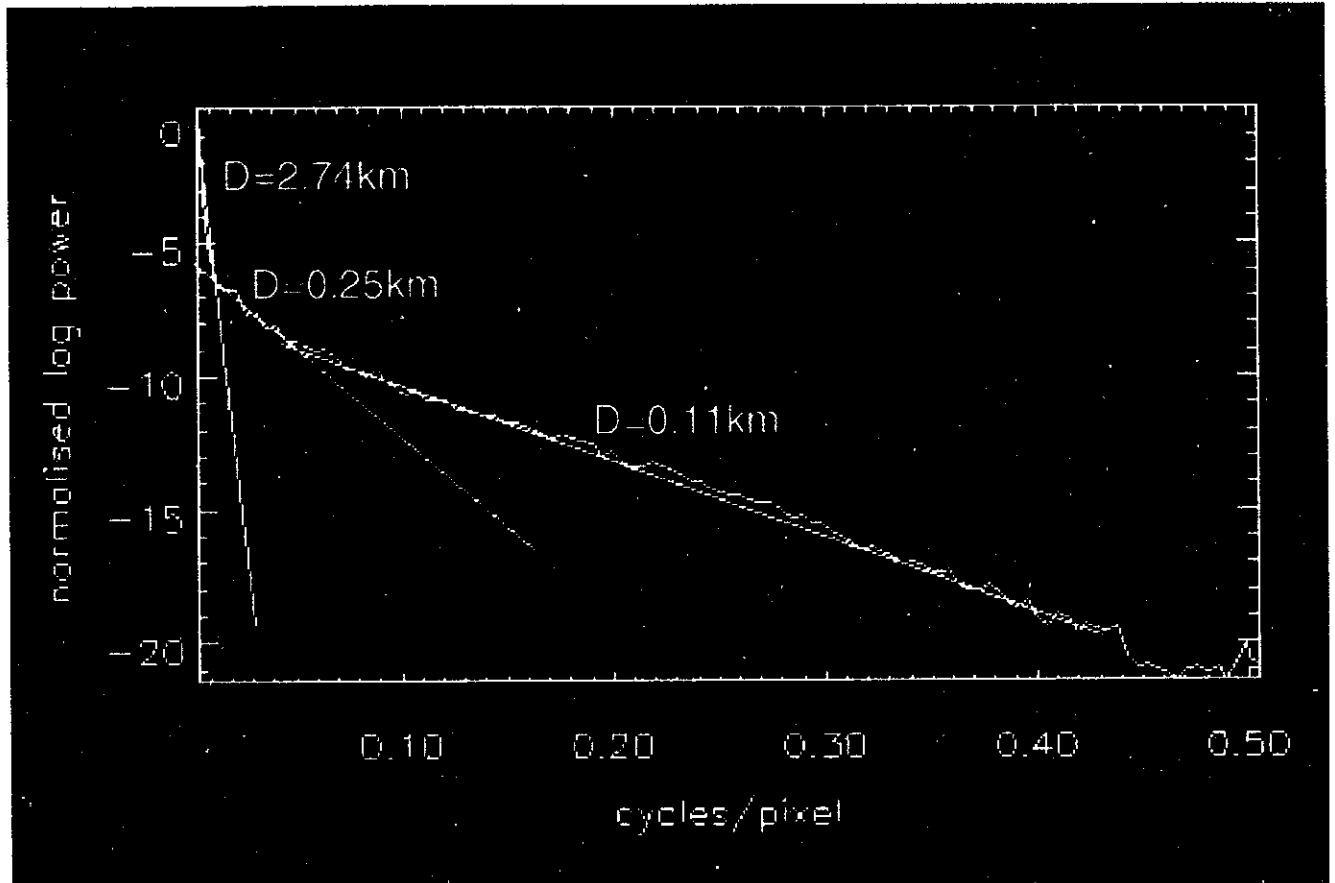


The schematic figure above shows how the frequency of the magnetic signal changes with the depth of the source body. It consists of the three pseudo depth slices for the Irosin area stacked vertically and spaced linearly, as opposed to being separated by a distance proportional to the theoretical depth. The diagram below shows how a high amplitude, high frequency magnetic signal can appear in the deeper pseudo depth slices due to "leakage". It is for this reason that the pseudo depth slices have been used more often as a tool to indicate general structure than as a depth indicator.



Radially Averaged Power Spectrum for the Irosin Aeromagnetic Survey

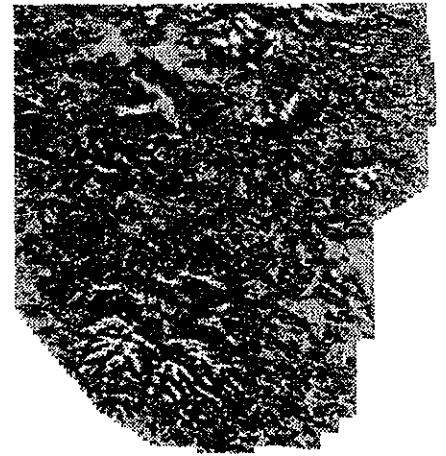
Linear sections of the power spectrum are theoretically produced by magnetic sources at a depth (D) which is proportional to the slope of the curve.



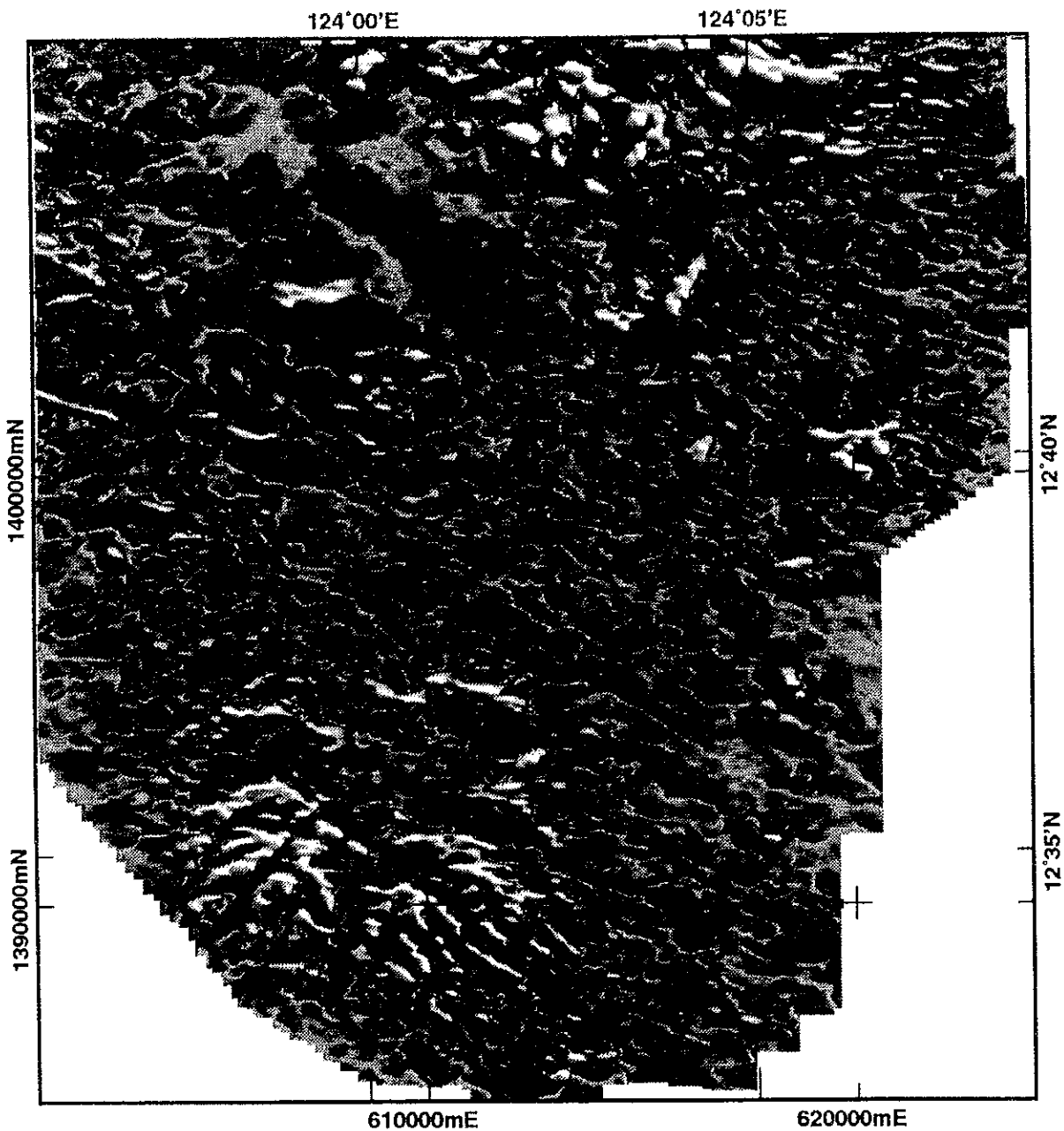
"Deepest" Slice
Theoretical Source
Depth=2.74km



"Intermediate" Slice
Theoretical Source
Depth=0.25km



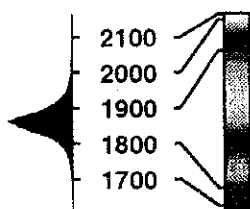
"Shallowest" Slice
Theoretical Source
Depth=0.11 km



**Irosin Project Area
Philippines**

TMI RTP Pseudo Depth Slice 1

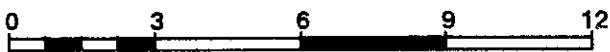
Colour: Magnetic Intensity
Shade: North-East Illumination



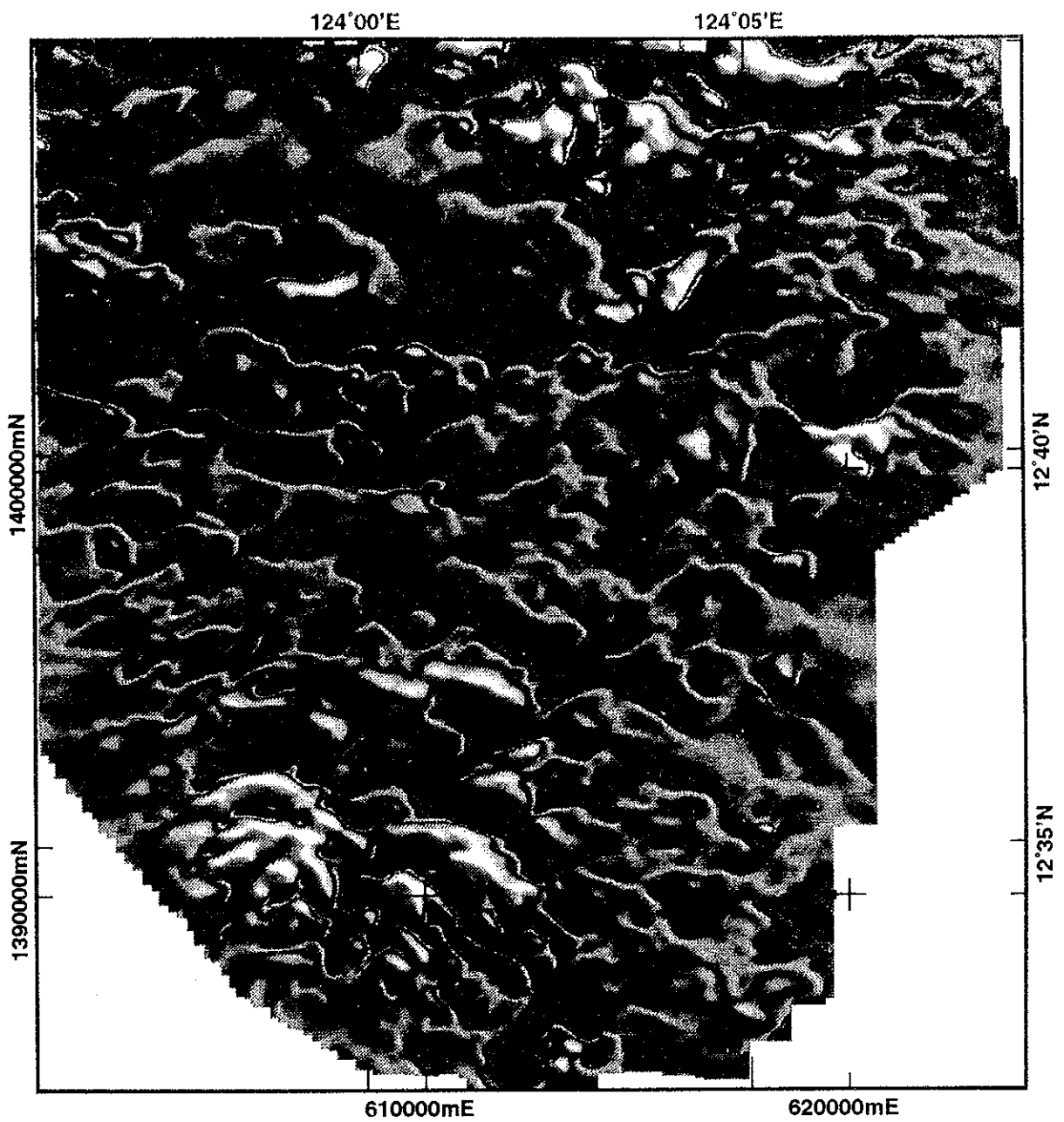
nanoteslas



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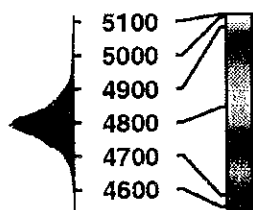
kilometres



**Irosin Project Area
Philippines**

TMI RTP Pseudo Depth Slice 2

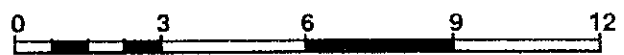
**Colour: Magnetic Intensity
Shade: North-East Illumination**



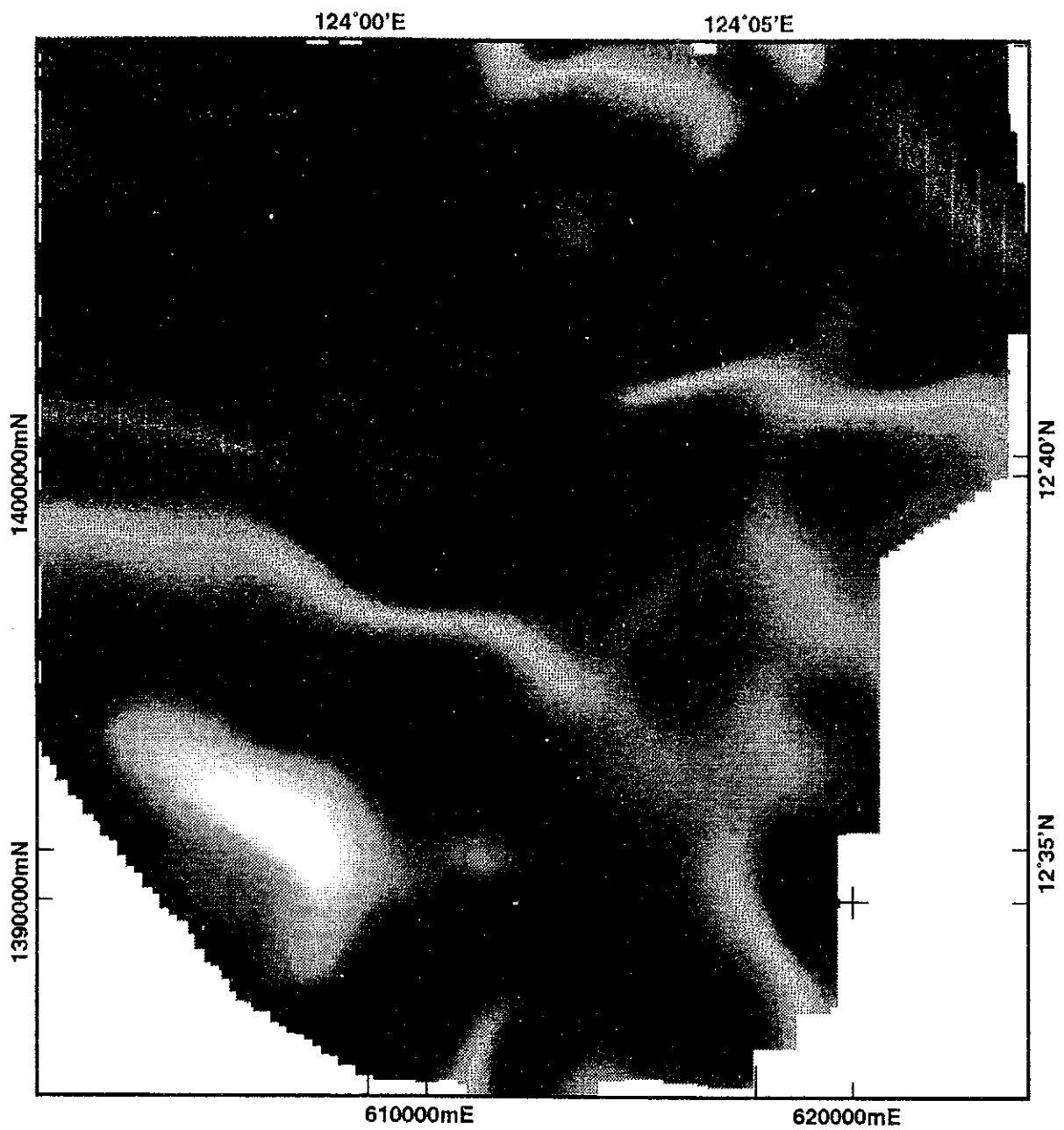
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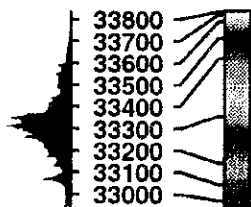
kilometres



**Irosin Project Area
Philippines**

TMI RTP Pseudo Depth Slice 3

Colour: Magnetic Intensity
Shade: North-East Illumination



nanoteslas



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kilometres

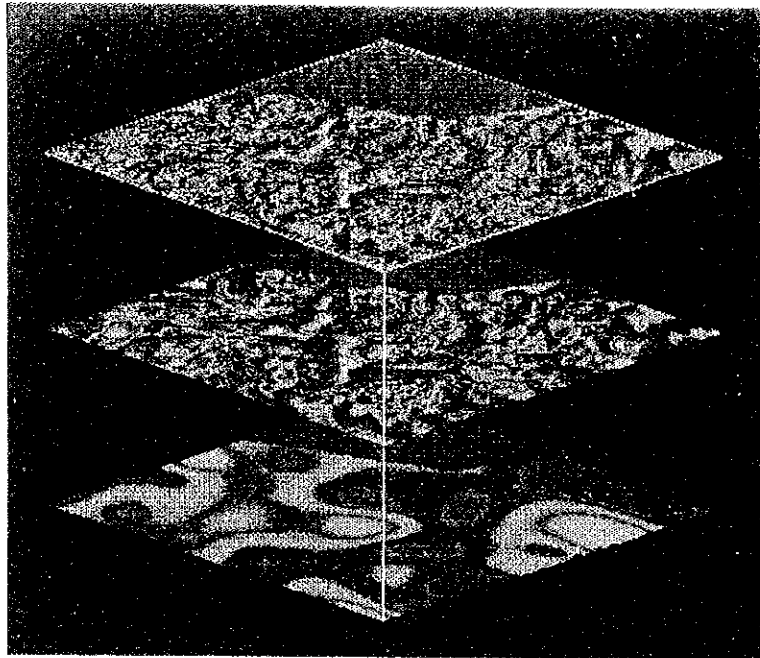
Application of Pseudo Depth Slicing to the Tiwi Aeromagnetic Survey

The Pseudo Depth Slicing technique was applied to the Tiwi aeromagnetic data as an attempt to separate the magnetic response of the surface volcanic material from the response of any significant intrusive bodies at depth. This is based on the theory that the rate of change in the horizontal plane of the magnetic field from a shallow body is greater than that for a deeper body (ie shallow bodies display a response of higher spatial frequency). Pseudo depth slices One, Two and Three are provided in this appendix.

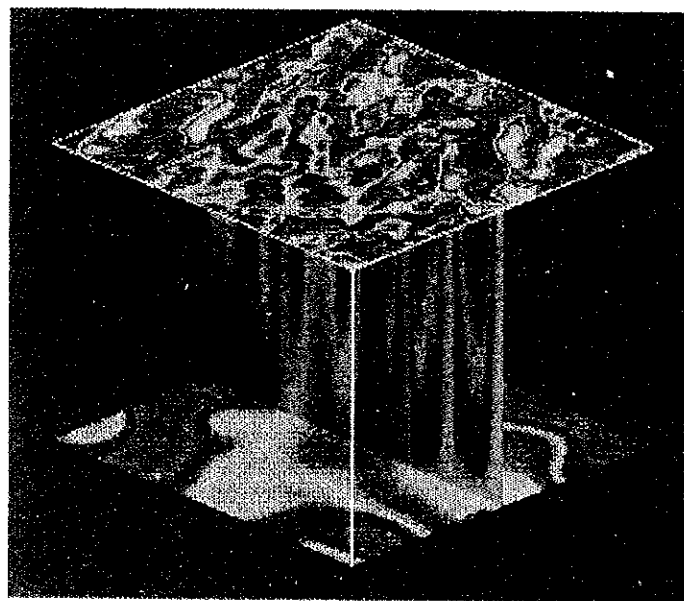
Problems arise with the pseudo depth slicing method when the materials at shallower depths have a high magnetic susceptibility. This can effectively hide or overpower the low amplitude magnetic fields of deeper bodies, and the two frequencies of data cannot be separated. Frequency separation can also be made ineffective or impossible by "leakage". Frequency filters must have a gradual cutoff (ie past a nominal frequency, the contribution of the data is gradually reduced) to avoid "edge effects" which may introduce noise or "ringing" to the data. Unfortunately this requirement results in high frequency, high amplitude magnetic signals appearing as broad, low frequency signals in the "deeper" pseudo depth slices (PDS), even though their source is at the surface. It is up to the person interpreting the data to determine the validity of any anomalies in the lower slices by comparing all PDS images and the original data.

Often, interpretation of the bulk structure of an area can be assisted by using the second and third pseudo depth slices to generalise the magnetic texture. The high frequency signal may be regarded as noise when trying to determine general structure as a first pass of interpretation. This approach has been taken with the Tiwi survey. For example, an approximate location of regional faults can be determined from one of the deeper slices. As the interpretation progresses the position of the faults can be refined with the other pseudo depth slices and the total magnetic intensity images.

The data from the Tiwi survey suffers from all of the problems described above in varying degrees. The high frequency magnetic signal from the surface volcanic material generally dominates the pseudo depth slices. Pseudo depth slice one, in conjunction with the first vertical derivative of the total field data, is very useful for separating different volcanic units by their magnetic texture. PDS2 is a "cleaner" image, with less high frequency noise.

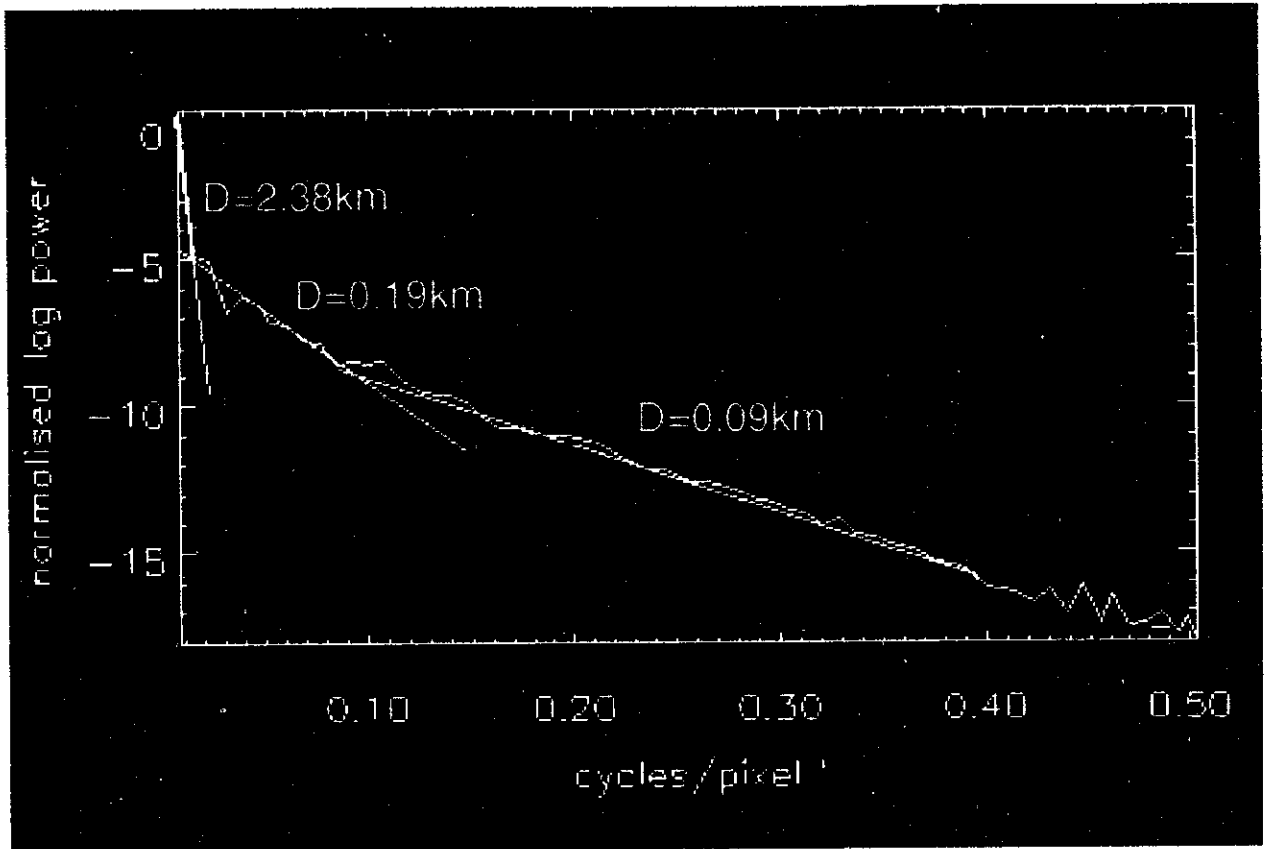


The schematic figure above shows how the frequency of the magnetic signal changes with the depth of the source body. It consists of the three pseudo depth slices for the Tiwi area stacked vertically and spaced linearly, as opposed to being separated by a distance proportional to the theoretical depth. The diagram below is a subset of the Tiwi data. It indicates how a high amplitude, high frequency magnetic signal can appear in the deeper pseudo depth slices due to "leakage". It is for this reason that the pseudo depth slices have been used more as a tool to indicate general structure than as a depth indicator.

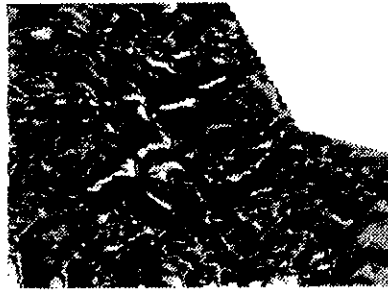


Radially Averaged Power Spectrum for the Tiwi Aeromagnetic Survey

Linear sections of the power spectrum are theoretically produced by magnetic sources at a depth (D) which is proportional to the slope of the curve.



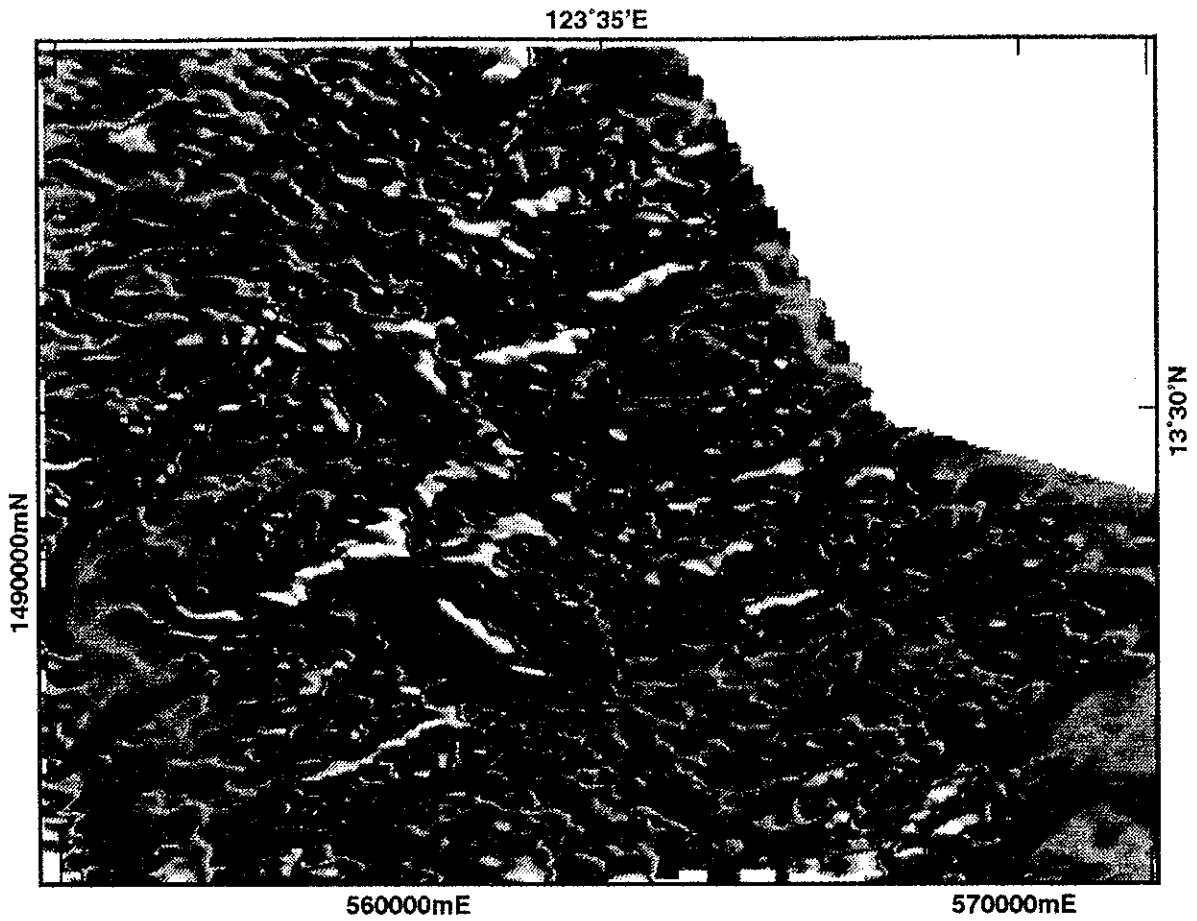
"Deepest" Slice
Theoretical Source
Depth=2.38km



"Intermediate" Slice
Theoretical Source
Depth=0.19km



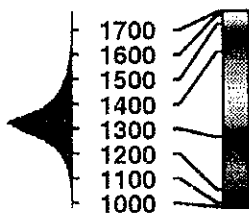
"Shallowest" Slice
Theoretical Source
Depth=0.09km



**Tiwi Project Area
Philippines**

TMI RTP Pseudo Depth Slice 1

Colour: Magnetic Intensity
Shade: North-East illumination



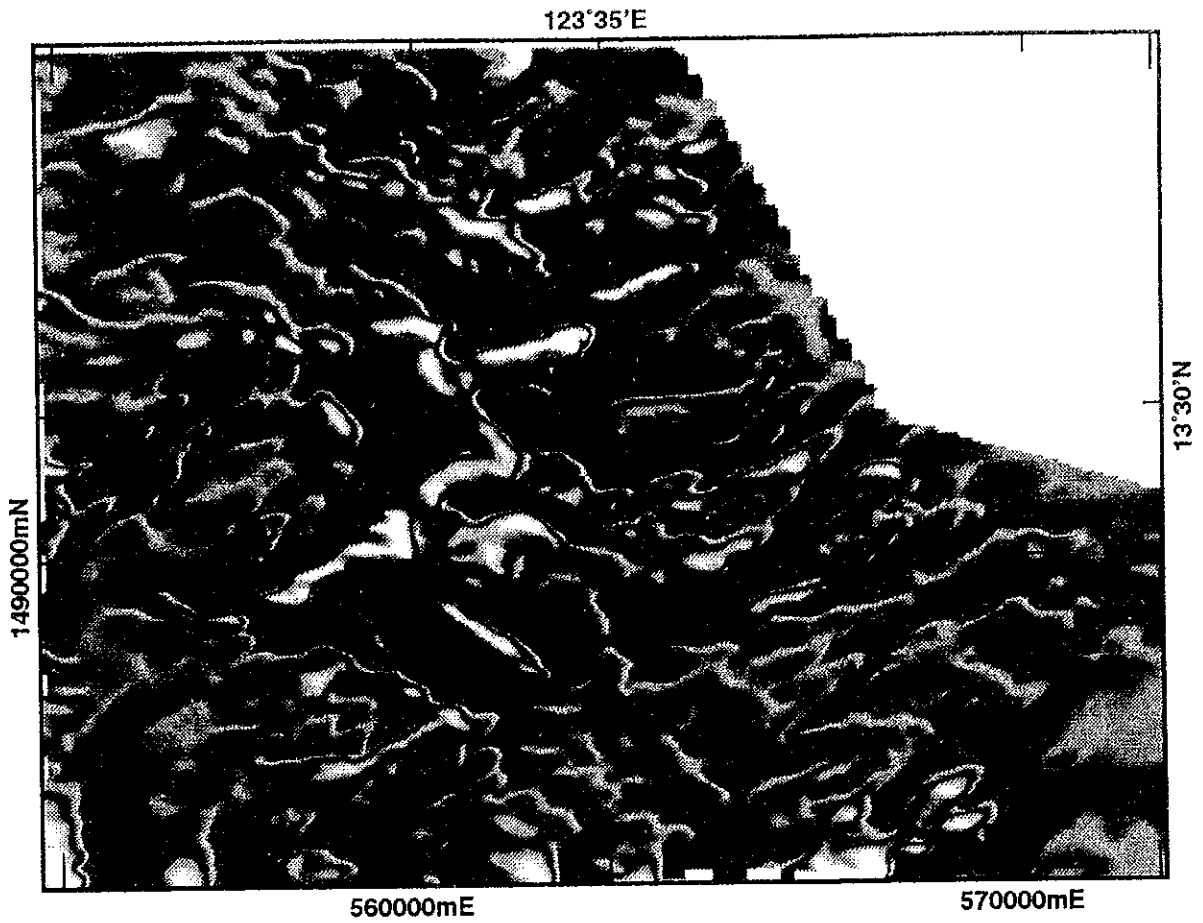
nanoteslas



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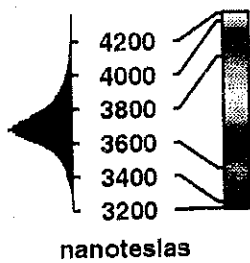
kilometres



**Tiwi Project Area
Philippines**

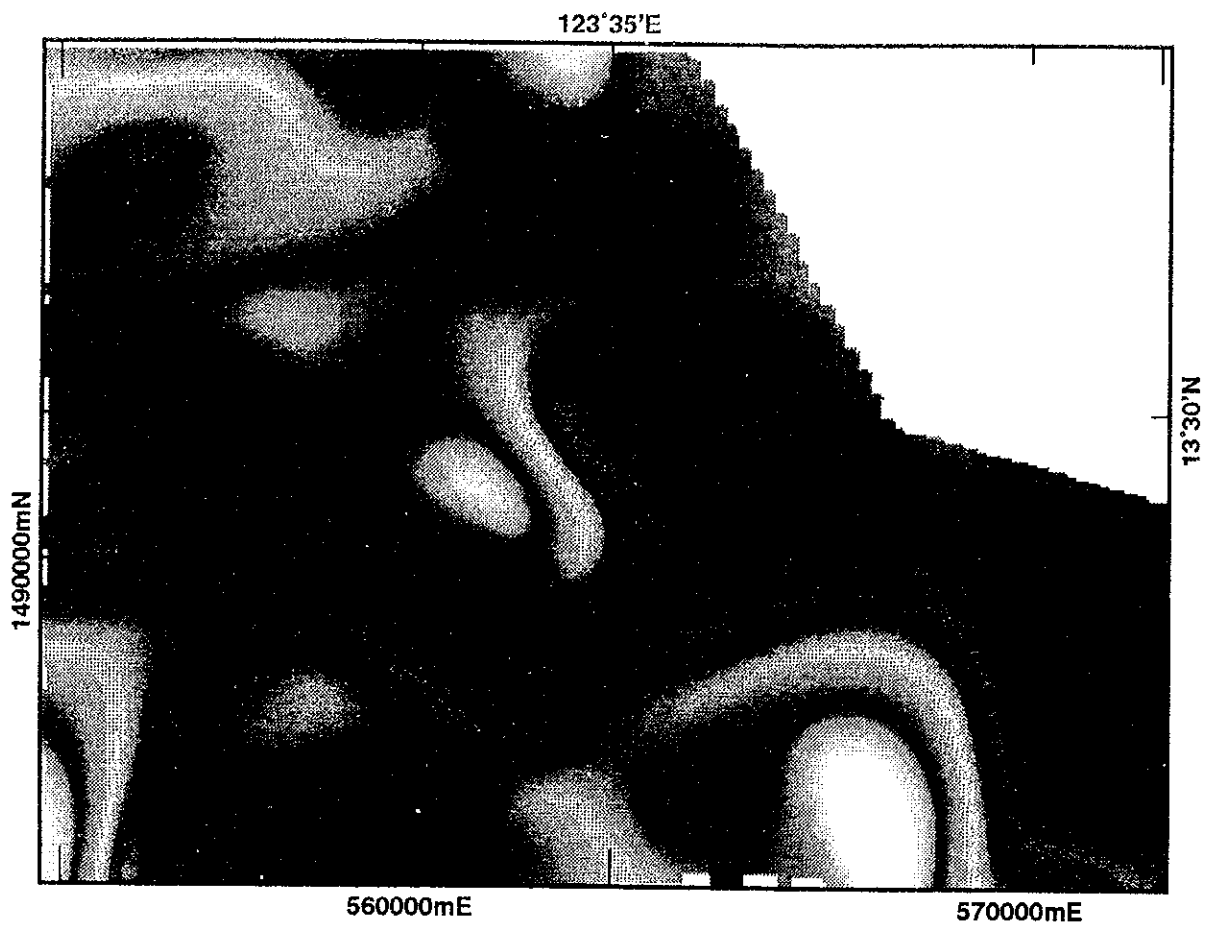
TMI RTP Pseudo Depth Slice 2

Colour: Magnetic Intensity
Shade: North-East Illumination



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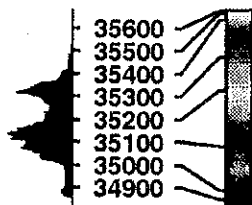




**Tiwi Project Area
Philippines**

TMI RTP Pseudo Depth Slice 3

**Colour: Magnetic Intensity
Shade: North-East Illumination**



nanoteslas

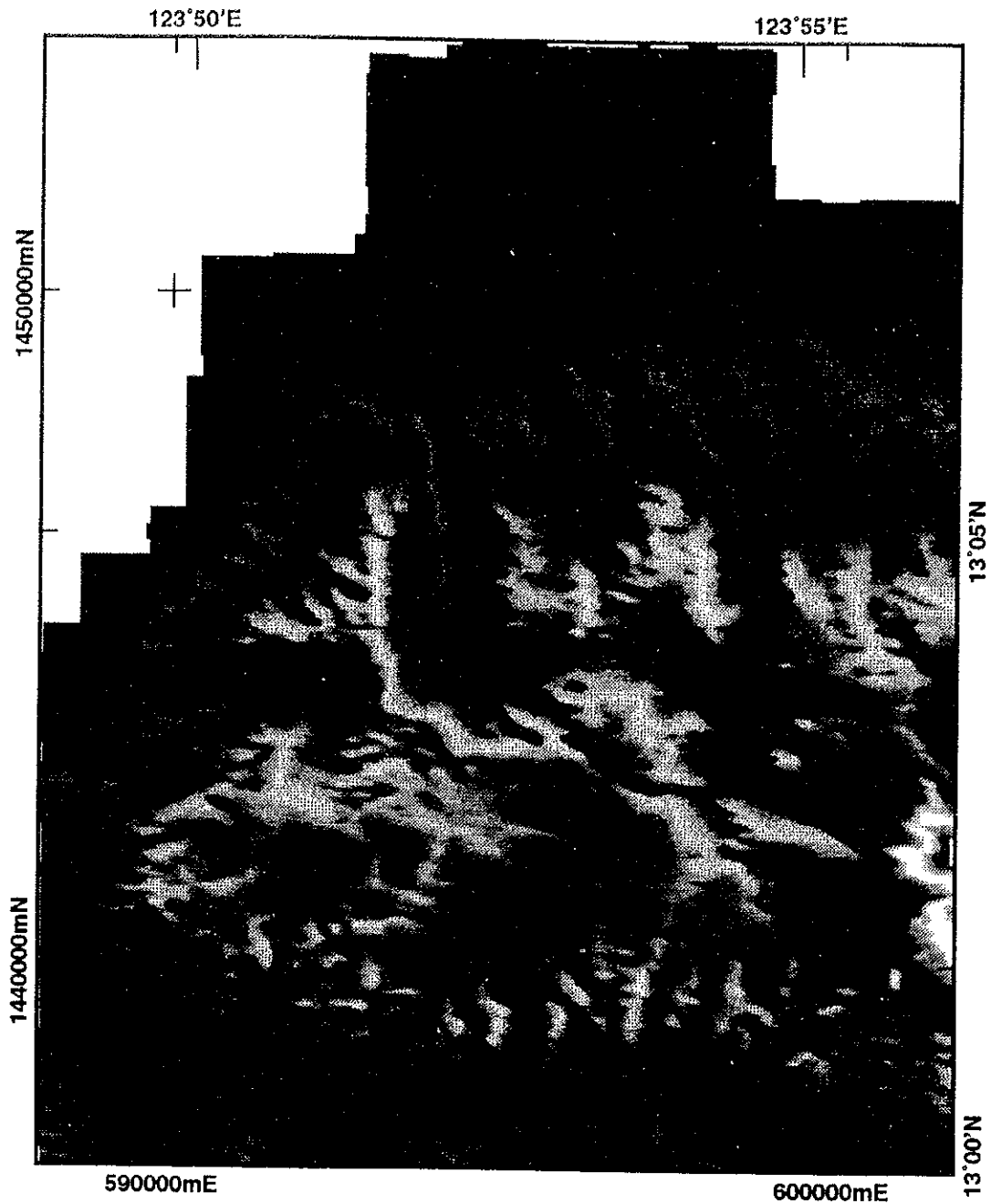


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kilometres

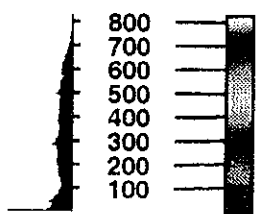
Appendix 4



**Legaspi Project Area
Philippines**

Digital Terrain Model

Colour: Elevation
Shade: North-East Illumination



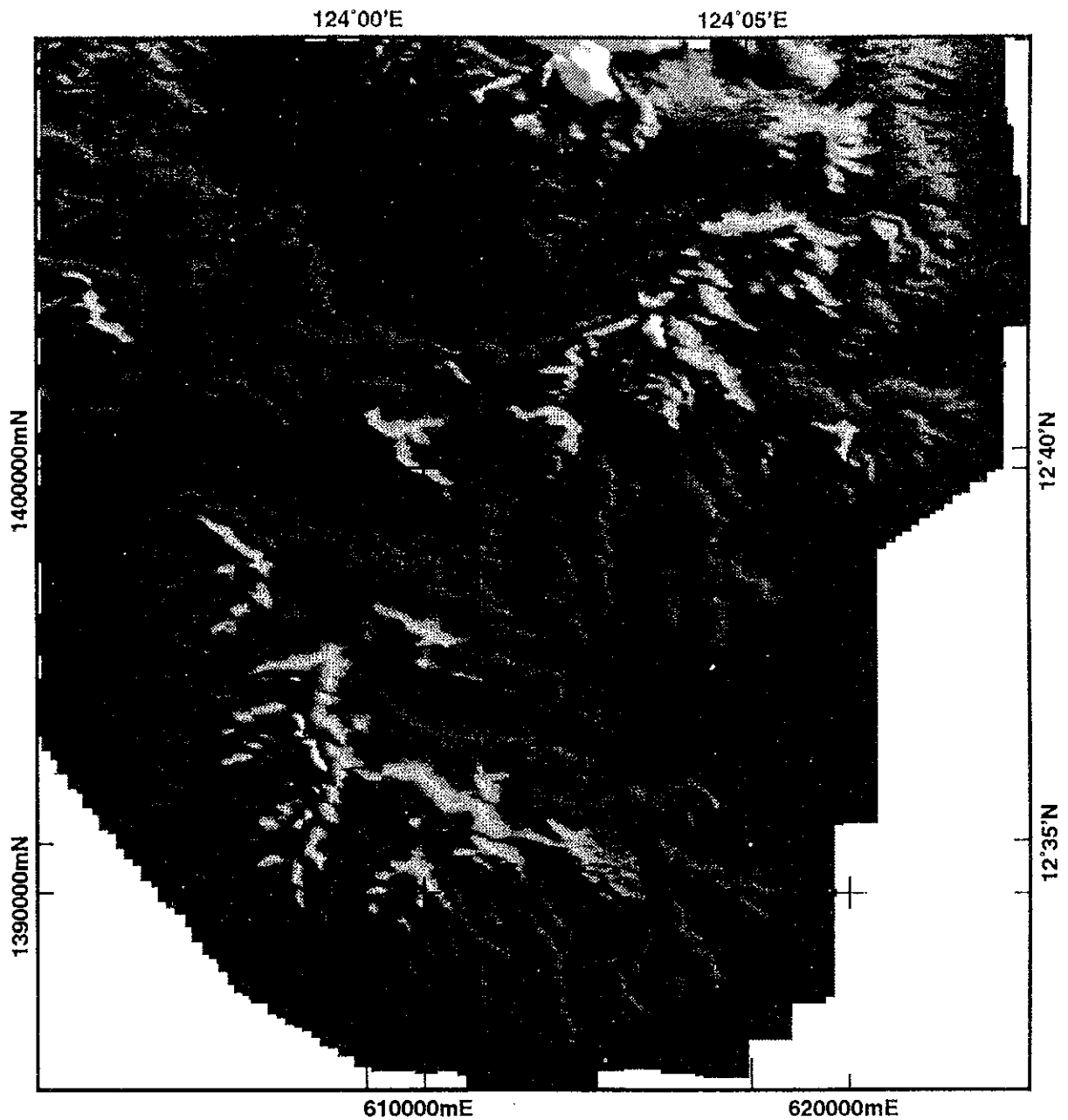
Elevation (metres)



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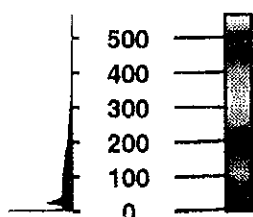
kilometres



**Irosin Project Area
Philippines**

Digital Terrain Model

**Colour: Elevation
Shade: North-East Illumination**



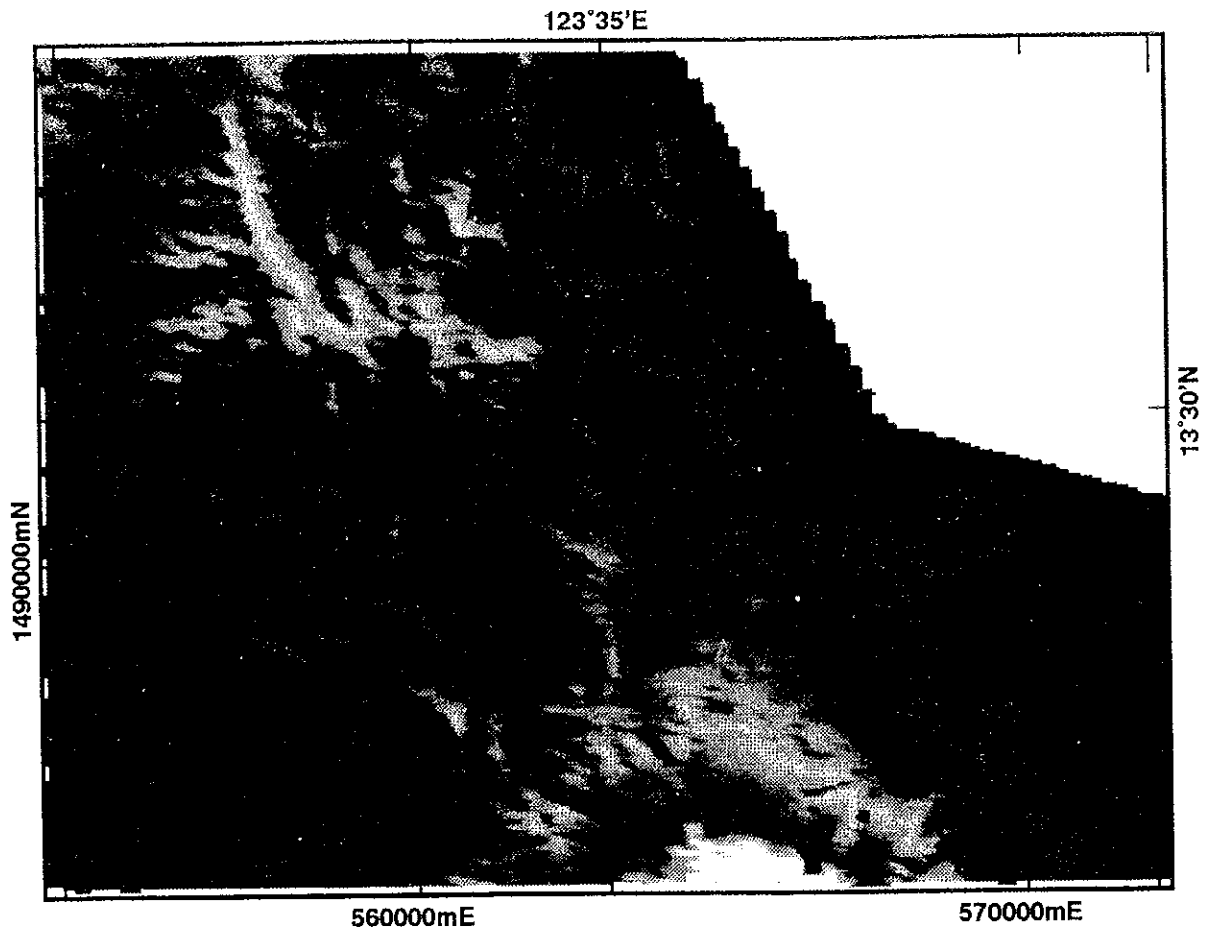
Elevation (metres)



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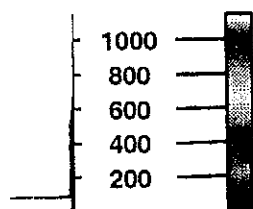
kilometres



**Tiwi Project Area
Philippines**

Digital Terrain Model

Colour: Elevation
Shade: North-East Illumination



Elevation (metres)



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kilometres